

**MOBILIZING KNOWLEDGE PROCESSES AND LIFEWORLD PRACTICES ACROSS  
LEARNING SPACES: EXPLORING GRADE 6 ENGLISH LANGUAGE LEARNERS'  
INQUIRY-BASED LEARNING EXPERIENCES IN A TECHNOLOGY-ENHANCED  
CLASSROOM**

by

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Mobilizing Knowledge Processes and Lifeworld Practices Across Learning Spaces: Exploring Grade 6 English Language Learners' Inquiry-Based Learning Experiences in A Technology-Enhanced Classroom

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## **Abstract**

Kindergarten to Grade 12 (K-12) diverse students, including English Language Learners (ELLs), use digital technologies both in school-sanctioned learning spaces (e.g., Cummins & Early, 2011; Cummins et al., 2015; Lotherington, 2008, 2011; Lotherington & Jensen, 2011; Marshall & Toohey, 2010; Rothoni, 2017; Toohey et al., 2015) and out-of-school learning spaces (e.g., Abrams, 2016; Lange, 2014; Lam, 2009; Black, 2008). Boundaries between these learning spaces are increasingly blurred, supported by the affordances of digital technologies (New London Group, 1996), as students bring their learning experiences and corresponding language, discourses, and registers from one realm of their lives to another. To address these changes in global and linguistic landscapes, provinces across Canada, have shifted curricular focus to developing 21<sup>st</sup> century competencies (see Alberta Education, 2011a; Ontario Ministry of Education, 2016) and placing a greater emphasis on utilizing inquiry-based learning approaches (see Ontario Ministry of Education, 2013a; Province of British Columbia, 2020b). Hence, many educators are reconsidering how they design pedagogical tasks that support their students in bridging their multiple lifeworld practices. The following ethnographic case study explored the learning processes of Grade 6 ELL students in a technology-enhanced classroom and through this lens considered what the teacher did to foster these processes. It draws from multiliteracies (New London Group, 1996), multimodality (Kress, 2000) and learning by design (Cope & Kalantzis, 2015) theoretical frameworks to better understand the learning processes in the tasks in which students engaged. The data generated included artifacts/student work, monthly participant literacy activities journals, field observations and student interviews. Additional interviews with teachers and the administrator provided further contextual clarity. A thematic analysis (Saldaña, 2016) and deductive analysis of the data occurred. Results revealed that

inquiry-based learning experiences, influenced by the current school context, were prevalent. Knowledge processes ELL students activated suggested that teachers targeted a range of knowledge processes in their task design. Additionally, these tasks afforded ELLs opportunities to mobilize their lifeworld practices from one learning space to another. Findings from this study will be of great significance to K-12 educators, teacher-educators and researchers.

## **Lay Summary**

The following study focused on exploring students' learning experiences in a technology-enhanced classroom. In these classrooms, digital technologies, such as SMART boards and assistive technologies, were readily available to support learning. Teachers used inquiry-based learning approaches which means that students were invited to explore their interests and questions. In order to better understand these learning experiences: I observed the classrooms, collected students' work, asked students to keep a researcher journal (where they shared their interests and learning), and also conducted interviews with students and teachers. My results indicated students' experiences included engaging in different learning activity types (Knowledge Processes). Students were able to move their competencies, such as the ability to effectively conduct internet searches, and knowledge, such as grandparent stories, into the classroom to help with their school assignments. It is suggested that teachers purposefully designed inquiry activities to encourage the bridging of home and school environments

## Preface

All chapters included in this dissertation were researched, analyzed, and written by the author, Melanie Wong. This study was approved by the University of British Columbia's Behavioural Research Ethics Board (UBC BREB Number: H14-01893) under the original project title: An Ethnographic Case Study of the Literacy Practices of English Language Learners within a K-12 Technology-Enhanced Classroom.

- A version of the illustrative example, Rap Battles, in Chapter 5 has been published in the journal *Canadian Modern Language Review*. Wong, M. M. (2019). "S:ay what you want...." Rap battles in a technology-enhanced classroom. *Canadian Modern Language Review*, 72(2), 169-182. <https://doi.org/10.3138/cmlr.2018-0155>.

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## **Dedication**

The following dissertation is dedicated to all the K-12 educators that work tirelessly every day to support their English Language Learners. I hope that my research supports/inspires you to continue this amazing and thoughtful work.

I also dedicate this dissertation to my grandmother, Wei Ting Wong, who was a dear friend and mentor. Although she did not get opportunities to attend school or learned that her granddaughter completed a PhD, she constantly inspired and encouraged this granddaughter to value education.

# **Chapter 1: Introduction**

## **1.1 Background**

### **1.1.1 Significance of Study**

This dissertation explores the learning experiences of grade 6 English Language Learners (ELLs) activated by their teachers' inquiry-based task design in a technology-enhanced classroom. The aim is to extend our understanding of how students mobilize their lifeworld meanings and productive practices into the classroom to mediate formal learning tasks, often due to the affordances of digital technologies. The multiple lifeworld experiences and meaning-making practices of kindergarten to grade 12 (K-12) students are important for educators to be aware of and consider when designing tasks as these experiences have implications for the learning that occurs in the classroom. Using Cope and Kalantzis's (2015) Learning by Design framework, to investigate the learning (knowledge) process that students' used in their inquiry projects, the following study provides insights, through the lens of the students' learning processes, into how teachers can design learning tasks that tap into students' prior experiences (both in and out-of-school) and informal and formal knowledge of digital technologies. My premise is innovative learning experiences can be purposefully designed by the teacher and often co-designed with students to potentially bridge multiple lifeworld (New London Group, 2000) and school experiences.

Studies in the area of ELL students and digital technologies have primarily focused on informal learning contexts (or what I term interstitial learning spaces [Wong, 2019]) (see Black, 2008; Lam, 2000). Interstitial learning spaces are those learning spaces that are not school-sanctioned: for example, learning that occurs in the hallway, the back of the classroom, outside of school. Students in these interstitial learning spaces often engage in literacy practices which

run parallel to what is occurring in the school-sanctioned learning spaces. For example, students might be watching a YouTube video of babies eating lemons during a Social Studies class or playing Minecraft at home. These students might also be texting during class or shopping online using their mobile devices. Some might argue that these are examples of off-task behaviours (i.e., not related to the topic of a lesson), however, these interstitial literacy practices are often rich and engaging for students. However, others have noted the educational value of such interstitial learning spaces such as adolescents becoming “Fan Fiction” writers (see Black 2008), adolescents developing digital literacy skills to create videos (see Lange, 2014) and adolescents cultivating a variety of identities (see Lam, 2004; Lange, 2014; Nardi, 2010). These interstitial learning spaces are everywhere and a part of daily life.

Similar to K-12 students now, I spent my youth in many of these interstitial learning spaces. During my teenage years I spent countless hours on dial-up internet (later high-speed internet) interacting with transnational peers in a variety of chatrooms, visiting fan forums (e.g., Savage Garden, Asian Dramas), and being a webmaster of my own fan-created websites. I used the internet to cultivate friendships and connect with peers who shared similar interests. For example, in a Savage Garden official fan forum, I was recognized by my peers as a knowledgeable Savage Garden fan. At the time, I found such recognition critically important. I wrote for an online Savage Garden newsletter and received daily emails from “fans” with regards to my song interpretation articles. Like Lam’s (2000) research participant, Almon, I became “someone” and found a form of the legitimacy that I did not have in my offline life. It was in these interstitial learning spaces that I was able to curate different identities and find acceptance. In other digital interactions, I belonged to a Net Family. I met other teenagers from different countries who had a similar interest in a popular Chinese television drama, and we formed a “Net

Family.” We each took on a role (e.g., Mother, Sister, Cousin). We often had family gatherings in online chatrooms. One of the literacy practices in this interstitial learning space included addressing your family members appropriately using the correct Chinese name (e.g., Biao Mei (younger cousin), Ma Ma (mother)). This Net Family paralleled an actual Chinese family. Many of the values we held as Chinese youth were reflected in our interactions: for example, we asked our family members for advice and respected our elders. Some of the participants also met in person, and these relationships transcended the digital learning spaces where they were initially created. All of these experiences in interstitial learning spaces cultivated my early interest in technology, and the interactions that occurred in these digital learning spaces had an impact on my personal and professional life.

In my professional life, my fascination with digital technologies and its potential impact on learning started early in my teaching career when I adopted a technology-rich classroom teaching model in an elementary school context. During my second and third year of teaching in a Canadian inner-city school, I started to explore the idea of using a learning management system, Desire 2 Learn (D2L), with my grade 5 and 6 students. The majority of my students were new immigrants to Canada. The reading levels in this classroom ranged from kindergarten to grade 8. As a novice teacher, I was keen to try any learning activity or use any tool that would help my students. Using a variety of digital tools such as the discussion forum and journaling within Desire to Learn (D2L), I designed an online classroom and used this learning space with my students on a daily basis. This experience was enlightening and career altering. My teaching philosophy changed as I noticed how the various learning spaces provided my ELL students with enriching learning opportunities. I saw that students who did not participate face to face (F2F) in the classroom became active participants of the online environment, posting regularly within the

discussion forum. My students were given opportunities to be leaders: for example, more technology literate students socialized their peers into a variety of digital practices, and students who were more literate regarding print-based texts supported their techno-literate peers who were struggling with traditional text forms. My online classroom space provided me with opportunities to get to know my students better; it allowed me to scaffold content that was being taught in the non-digital environment. I also saw various opportunities for meaning-making that were not possible in non-digital environments using just paper and pencil, such as the creation of videos, journaling, and multimodal representations.

I not only used a learning management system but also incorporated a variety of technologies into my everyday practice, from SMART boards to assistive technologies such as Read, Write & Gold. I noted how some of my students preferred using technologies and others did not. However, what my classroom afforded my students was options for their learning. As I became a more experienced teacher and later a teacher mentor, this notion of providing options for learners who come by knowledge in diverse ways has become more prevalent. Learning is not about the technology, in my opinion, but rather about how it provides many options for students to engage in more purposeful and productive meaning-making. As an educator, I was the facilitator, and my role was to design authentic tasks which allowed my students to engage in their own personal inquiries. These learning opportunities included providing my students with a variety of tools (digital or not) to engage in meaning-making.

With the recent COVID-19 pandemic, my views on using technology to support learning have been further shaped. In my current leadership role in a school district, I have built the capacity of teachers as they entered into emergency remote learning. These opportunities to support teachers as they used Google Meets, Google Classroom, Desire 2 learn (D2L) and a

variety of other technologies to teach their ELL students remotely has been fascinating for me. I have also been intrigued by how technology has connected my colleagues and me. I have been able to use digital tools, such as Microsoft Teams, to host K-12 teacher drop in sessions for hundreds of teachers across the school district. In these collaborative learning spaces, the conversations have been rich as we have shared best practices, designed tasks, and explored new ways to support our students. These recent experiences have supported my views that digital technologies provide options for learning especially when they are used intentionally and incorporated into task design.

Reflecting on these experiences, I can provide many examples that present a compelling argument to educators, policy makers, and school districts about why teachers should be using technology in the classroom—in particular a technology-enhanced classroom model of instruction. In my own case, in my early years of teaching with Grade 5 and 6 students which I discussed above, the learning for both my ELL students and me went beyond what I had witnessed in a traditional classroom. The majority of my students jumped two or more grade levels in reading ability when comparing assessments from the beginning of the year to the end. However, although academic gains are important, it was the social gains from this technology-enhanced learning experience that were most phenomenal. One of my fondest memories was bringing two of my students to a conference to present. These girls were confident and excited to share with experienced teachers how a technology-enhanced learning experience had impacted their learning lives (Sefton Green & Erstad, 2013). Many of the mindsets about teaching I had previously acquired (Lankshear & Knobel, 2007) were changed or adjusted as a result of my experiences teaching in a technology-enhanced classroom.

I am aware that not every teacher will have had the same experiences with a technology-rich context as I have had, nor will they necessarily have the same digital skill set that I have (e.g., my experiences as a former technology teacher). I am also aware that not every child will favour this type of learning experience. However, from my experiences in these classrooms, it becomes evident that the way learning tasks are designed is critical for innovative learning to occur, especially in a hybrid classroom. This argument is supported by scholarship (see Vaughan et al., 2013) asserting that hybrid models of teaching should include a thoughtful (and it appears intentional) integration of technological and F2F approaches. Extending this scholarship, it is evident that teachers need to gain a better understanding of their learners and design tasks that encourage opportunities for students to practice a range of different learning processes (Cope and Kalantzis, 2009; 2015) to support their academic success. Although not every school district can afford digital technologies, this inquiry will suggest that technology is a potential tool to support learning in innovative and authentic ‘real-life’ ways.

This study is not the first to argue that technology could be used to support learning of K-12 learners. Rose and Meyer (2002) stressed that technology should be used to meet the various needs of learners. They assert that teachers take on the role of a designer of meaning similar to the role of an architect. Architects create ramps and make buildings accessible for all users; this was the premise that Rose and Meyer wanted to see replicated within a classroom with teachers using technology as a tool to make learning accessible for all learners. What comes out of Rose and Meyer’s work is this concept of a teacher as a designer, a concept that is integral to a study of technology-enhanced classrooms. “Design” is critical to both teachers and students as both are designers of meaning (New London Group, 2000). In a technology-enhanced classroom, design plays a significant role in the meaning-making process. The multimodal choices that are made

(Kress, 2000) within a classroom context by students and a teacher contribute to how meaning-making occurs. These choices can be potentially linked to mindsets (Lankshear & Knobel, 2007). This study extends the literature with regards to research that has already been done with ELLs within digital social contexts (e.g. Black, 2008; Lam, 2000; Yi, 2008) to an elementary school classroom setting.

In the next section, I provide a brief overview of the research context in which I situate my study. This literature provides compelling justification for a study such as this, underscoring why such an examination of technology-enhanced learning is essential in a changing global and technological landscape.

### **1.1.2 Literature Context**

Digital technologies in North America are ubiquitous. From smart phones to the Internet of Things to the rise in the pandemic era of video conferencing, innovations in digital technologies have led to transformations in how humans communicate with one another.

Previous studies have explored students' literacy practices in informal digital learning spaces (e.g., Black, 2008; Black et al., 2017; Black & Reich, 2012; boyd, 2014; Burke, 2013; Ito et al., 2013; Jenkins et al., 2016; Lange, 2014; Lam, 2009; Lam & Smirnov, 2017; Lam & Warriner, 2012; Marsh, 2010; Yi, 2009). These scholars have investigated how K-12 students engage in rich learning experiences through digital learning spaces that tap into their communicative repertoires (Rymes, 2012). A communicative repertoire refers to the ways individuals use language and different means of communication (dress, posture, gestures) to successfully function in different communities in which these individuals participate (Rymes, 2010). These communicative repertoires include using different languages to communicate in online platforms such as chatrooms (Lam, 2004); using different modalities to express meaning

such as creating videos on YouTube (Lange, 2014); and interacting with transnational peers in a variety of different digital social contexts such as children's virtual worlds (Black & Reich, 2012), World of Warcraft (Cornillie, et al., 2012; Gee, 2007; Nardi, 2019), fan fiction websites (Black, 2008), online fan communities (Lam, 2000) and many other digital learning spaces.

Scholars researching K-12 digital learning (see Black, 2008; Lam, 2004; Sefton-Green, 2016) have alluded to how the experiences and learning that occurs in virtual environments potentially impact what happens in the classroom. As mentioned previously, research suggests K-12 students engage in more diverse digital out-of-school learning compared to school-sanctioned learning contexts (see Black, 2008; Erstad & Sefton-Green, 2012; Jenkins et al., 2016; Lam, 2004). The informal learning experiences occurring in out-of-school spaces often differ from those that occur in the classroom because they are often more engaging and not restricted by curricular demands taught by employing traditional didactic pedagogies. Such experiences are part of these students' lifeworld practices (New London Group, 1996). For example, in Lam's (2004) study of bilingual chatrooms, participants used their various languages to communicate with their peers. In her findings, Lam indicated that students became more confident and talked more in class as a result of their interactions in an out-of-school online bilingual chatroom. As well, in Black's (2008) study of out-of-school fanfiction websites, participants wrote fanfiction and posted it online. This digital learning space allowed participants opportunities to gain writing feedback from transnational peers. Black's participants indicated they became more confident writers as a result. These studies illuminate the various interests that students potentially have and educators might be unaware of. Though these studies examined only the learning experiences in social contexts outside of the classroom, the potential implications for classroom learning are apparent and comprise a major focus for my study.

This study also builds on scholarship exploring the notion of informal learning spaces (e.g., Compton-Lilly, 2014; Erstad et al., 2016; Gee, 2004; Sheehy & Leander, 2004; Lemke, 2004) and the movement of ideas and people. This movement suggests that there are no clear boundaries as ideas and people move between and across a variety of different informal learning spaces (Erstad et al., 2016). Learning spaces are constantly changing and are not static; technology has amplified the affordances for this to happen. Students are not restricted to physical learning spaces but are able to move across the seemingly invisible borders between other learning spaces (virtual or not) although students might be in one physical arrangement. Although such research has addressed learning spaces in a variety of ways (for example, World of Warcraft and online chatrooms), the complexities of these learning spaces and the implications they might have in a classroom have not been fully addressed. The current study aims to fill this gap, exploring how students potentially mobilize their knowledge processes, the range of ways of making knowledge and activities an individual does in order to know (Cope & Kalantzis, 2015; Kalantzis & Cope, 2020), and their lifeworld practices (New London Group, 1996) between and across learning spaces in sequences of learning. In order to better support their students, teachers need to gain a deeper understanding of what occurs in informal social contexts since students are engaging in these practices on a daily basis. To that end, this study also extends our understanding of the experiences of elementary-aged students, in particular English language learners, in virtual worlds.

However, although there is an awareness that the learning experiences of K-12 students include utilizing digital technologies in the classroom, questions still arise with regards to technology-enhanced classrooms and the implications for student learning experiences, more specifically in an elementary context. These questions become more urgent when considering

Canada's increasingly diverse population. Over the past several years, Canada has experienced a steady growth in population due to international migration (Statistics Canada, 2018), in part due to changes in government immigration policies (e.g., Refugee and Humanitarian Resettlement Program [Government of Canada, 2017]) and changes in the global landscape (e.g., increases in global migration, political conflicts). With the influx of new immigrants and immigration on a constant rise, the linguistic landscape continues to change (see Douglas Fir Group, 2016; Cope & Kalantzis, 2009; New London Group, 2000). This demographic change has added to the complexity of classroom learning as K-12 teachers grapple with more effective ways to design tasks and accommodate ethnically and linguistically diverse students. I can personally attest, as a K-12 educator and researcher, that this is the reality K-12 educators are facing in classrooms daily whether during a pandemic or not. Classrooms are increasingly complex due to new learners with various linguistic, educational, and socioemotional needs. One potential tool available to both teachers and students to support such diverse learning needs is digital technologies (e.g., computer, iPads, SMART boards, Learning Management Systems). Over a decade ago, Cummins, Brown and Sayer (2007) suggested using technology in classrooms with diverse populations; since then, research into technology usage in multilingual classrooms has been growing (see Cummins, 2006; Lotherington, 2008, 2011; Lotherington et al., 2009; Lotherington & Paige, 2017; Marshall & Toohey, 2010; Ware, 2008). However, although technology usage is ubiquitous outside of the classroom, it has not necessarily been widely taken up in the classroom context. Also, there is a limited understanding of technology-enhanced learning environments and the learning experiences that students have in these contexts. It is therefore critical to conduct further research to better understand why this is the case.

What we do know from research so far is that multilingual students engage in various literacy practices in a K-12 classroom context (e.g., Price-Dennis et al., 2015; Rothoni, 2017; Smith et al., 2017; Stewart, 2014; Toohey et al., 2015). These researchers allude to the complexity of meaning-making in these settings by elaborating on the many different literacy practices students engage in. For example, the literature informs us that in some multilingual classrooms, students use their different languages and different modes to express meaning (e.g., Giampapa & Sandhu, 2011; Marshall & Toohey, 2010; Smith et al., 2017), which may include the creation of Identity Texts (Cummins et al., 2015; Cummins & Early, 2011). In these multilingual classrooms, teachers design innovative tasks, such as students' production of varied Identity Texts, that allow their students to tap into their various communicative repertoires (Rymes, 2012). The key understanding from this literature is that the teacher plays a central role in facilitating these learning opportunities and creating a space for these innovative literacy and content learning practices to occur. As a result of these innovative learning opportunities, students can use different modes (digital or not) to make meaning: for example, creating videos, using dance, and composing music. As a case in point, Abrams and Russo (2015) have explored students' literacy practices within classroom contexts and described how students layer literacies. They define "layering literacies" as the ways in which students combine non-digital and digital practices, spaces, and texts that work together to support meaning-making (p. 132). Layering is not tidy or simple and not linear, but rather multidirectional. The participants in Abrams and Russo's study moved fluidly among various literacies, often engaged in phone calls, text messages, social networking, print based literacies, and video gaming simultaneously. Understanding these layered literacies provides useful insights into students' various learning experiences, especially in a technology-rich environment.

Studies such as Abrams and Russo's address older K-12 learners, but only limited research has been undertaken with elementary-aged students. As well, according to the literature, the modes used are often dependent on what is available to these students and what the teacher requests of them: in particular, the knowledge processes that teachers intend to activate in their task design (Cope & Kalantzis, 2009; 2015). In other words, the tasks the students engage in school are often not the traditional paper and pencil worksheets, that too commonly engage learners in low challenge cognitive activities but rather tasks which incorporate specific learner needs and students' interests, prior understandings and, importantly, activate a range of challenging ways to develop knowledge. This branch of research illustrates the complexities of a classroom and how classrooms differ significantly from one context to the next. Yet still, little is known about the learning tasks that occur in social contexts such as a technology-rich classroom, particularly those that use inquiry-based approaches.

What the literature does indicate is that technology has been utilized in classrooms in a variety of different ways: including using iPads as a tool to express meaning and support literacy development (Hutchison et al., 2012); creating digital stories (using sound, text, and images) which enable ELL students to share their narratives (Johnson & Kendrick, 2017; Oskoz & Elola, 2016; Vinogradova et al., 2011); using SMART boards to support vocabulary development (Wong, 2014); coding in the classroom using programming environments such as Scratch (Maloney et al., 2010); and engaging in video gaming, such as Minecraft (Abrams, 2016). Still, the current literature highlights only some of the ways in which technology has been incorporated into the classroom context, while little is known about the learning implications of various technologies in a K-12 context, particularly with respect to inquiry-based approaches. As well, questions linger with regard to the learning experiences that occur as a result of these

technologies; some of this research often focuses on the technology, throwing a bright light on the actual tool rather than addressing the implications for learning and the learning tasks that occur as a result of using these digital technologies. When it comes to school-based literacies, students are often required to check their own technoliteracies at the classroom door.

Wohlwend (2010) discusses the need for educators and researchers to recognize the “new basics” (Dyson, 2013) and reshape in-school literacies to more closely match a child’s actual lived realities. Shifting away from traditional approaches of learning, Wohlwend highlights the contrasts between literacy 2.0 worlds and literacy 1.0 schools. Literacy 1.0 is described as the “analog ways of writing” that schools traditionally value (Wohlwend, 2010, p. 146). However, Wohlwend asserts that in today’s world, the dominant ways of meaning-making have moved toward an image on the screen away from print on the page. Similarly, Knobel and Lankshear (2011) note an urge to use digital resources to promote abilities that address traditional print texts instead of addressing multimodal texts. Although the technology might be available, these tools are not necessarily used in ways that allow students to generate multimodal texts, but rather are used in a traditional pencil and paper sense (e.g., filling out a question and answer assignment using the computer). The current study explores these concepts further by providing understanding of how using technologies changes (or not) the learning tasks and/or learning experiences in K-12 classroom contexts.

An additional challenge is that, although technology tools are increasingly present in the K-12 classroom, they may not be used (e.g., Blackwell et al., 2014). A variety of reasons have been documented in the literature, but prominent among them is the teacher’s lack of knowledge or training. Fullan (2013) asserts there has been “digital disappointment” (p. 36): although countless school districts and governments have attempted to take up this idea of a “21<sup>st</sup> century

skills mantra . . . it turns out that inspiration is not much of the basis for action,” and therefore digital technology is not being taken up in classrooms (p. 36). Although many Canadian provinces (e.g., Alberta Learning, 2003; Ontario Ministry of Education, 2008) address aspects of Information and Communication Technology (ICT) in their curriculum, how technology is addressed in various classrooms varies (Fullan, 2013). In addition, due to competing curricular demands, digital technologies may not be used if teachers feel pressures to stick to more familiar pencil and paper tasks in order for students to succeed on standardized exams. Even if teachers integrate technology and have access to it, one concern that emerges is that often teachers and school districts become fixated on the technology, as noted earlier, rather than on good pedagogy (Fullan, 2013, p. 39). Alternatively, although the technology might be available, some school districts have adopted strict policies that limit its use, for example, the use of internet filters to promote students’ internet safety (see York Region District School Board, 2016; Toronto District School Board, 2014). These school districts focus on the concept of “protection,” implementing policies that inhibit students’ access to information deemed inappropriate. Their rationale is that schools have the responsibility during school hours to protect children from the potential dangers of digital technologies because children are vulnerable and perhaps unable to make appropriate decisions. In addition, there are legal and liability issues for school districts when allowing students to access information on the internet that is not filtered which I can attest to has been a significant issue during this COVID-19 pandemic for school districts.

However, such filters potentially hinder authentic learning experiences and often interfere with students effectively using their digital devices. When school boards filter the content that comes into their classrooms, one wonders whether or not their students are engaging in authentic learning opportunities, especially when these resources are already available outside of the

classroom. Alternatively, in recent years, some school districts have moved toward educating students about how to use technology appropriately (Richardson, 2016), this was more salient especially during the recent pandemic when students were learning remotely. As one example, Teaching Digital Citizenship has been taken up as a way to educate students with regards to how to properly use digital technologies (Ribble, 2011). However as digital technologies continue to change, the reality is that many schools are ill-equipped to understand these technologies in comparison to students who use technology regularly in out-of-school contexts.

Also important to this study is the notion of inquiry-based learning. Inquiry-based learning is not new to the field of education as its roots go back to Vygotsky (1994) and Dewey (1925). From these writings, we recognize that inquiry is a way of being and a way to explore/experience the world. In K-12 contexts, studies have illustrated how inquiry-based learning provides students with an entry point to engage in self-exploration with the teacher as the facilitator (e.g., Clifford & Frieson, 1993; Clifford & Marinucci, 2008; Coiro et al., 2016). Students in these learning environments ask questions and seek to find answers to their questions: a considerably different process compared to the more teacher-centred approaches of learning dominant in previous decades. In the Canadian context, inquiry-based learning approaches have become increasingly significant—with inquiry, question-based, and project-based approaches being encouraged in redesigned curricula (see Ontario Ministry of Education, 2013a; Province of British Columbia, 2020b). Teachers are now expected to implement inquiry-based learning in their classrooms (technology-enhanced or not). This shift in curriculum design across the country, influenced by inquiry-based learning literature (see Clifford & Frieson, 1993; Clifford & Marinucci, 2008), also suggests next steps for research: notably, to fill a gap in our collective understanding of inquiry-based learning in an elementary K-12 setting, and more

specifically a technology-enhanced classroom. In technology-enhanced classroom environments, students are provided with more affordances and technologies to aid in their self-directed inquiry explorations. From my own K-12 educator experiences, I find technology makes information easily accessible for both teachers and students (e.g., by entering search terms into Google, a student is able to find information quickly). It provides different modes for students to engage in meaning-making and become both a consumer and a producer of text.

This overview of literature has illustrated the need for further study to address research gaps in the use of classroom-based technology. Specifically, the current study investigates the techno-learning experiences in a grade 6 technology-enhanced environment. My purpose is to further our understanding of students' learning experiences and through that lens better understand what teachers did in their task design to activate ELL student's knowledge processes with inquiry-based learning approaches. This study also explores how students activate and move knowledge processes as well as their *known* (which I will discuss further below) between and across learning spaces. As I have highlighted so far, both technology and inquiry-based learning approaches are becoming ever increasingly prevalent in our current educational landscape. To more effectively teach ELL students in particular, we need to better understand how teachers create and foster environments where both digital technologies and inquiry-based learning approaches can be effectively implemented.

### **1.1.3 What is a Technology-Enhanced Classroom?**

This dissertation examines the learning experiences of elementary ELL students in a technology-enhanced classroom. In this dissertation, when I refer to technology, I am specifically referring to digital technologies (e.g., computer, iPads, iPods, etc.). I recognize there

are many technologies that are not specifically digital, but for the purposes of this dissertation, any mention of technologies will refer to digital forms.

Technology-enhanced classrooms incorporate a variety of digital technologies which include, but are not limited to, SMART boards, iPads, web-based technologies, learning management systems, assistive technologies, and computers. Although digital technology is prominent in these environments, traditional means of meaning-making are still available (e.g., paper and pencil).

Recent research recognizes that in various learning environments, children are engaging in unique learning tasks that are often specific to social context. For example, in research such as Abrams' (2016) study of a girl who used Minecraft, the learning tasks included creating a virtual world using pixelated blocks. Participants in this digital learning space created fictional worlds which allowed them to experience various emotions (e.g., sadness for a loss of a virtual pet, excitement about their digital creations). In another space, students were participants in YouTube (Lange, 2014). On YouTube, K-12 students can be both consumers (e.g., watching videos) and producers (e.g., creating vlogs). In YouTube digital learning spaces, individuals are able to comment on videos and use various modes to create videos. In yet another digital learning space, the online children's virtual world *WebKinz* (Black & Reich, 2012), children are navigating the world via an avatar of their virtual pets. The focus of activities in this virtual world include caring for their virtual pet. In this *Webkinz* digital learning space, participants need to earn Kinzcash in order to feed their pets; means to earn may include taking jobs at the employment centre or answering trivia or academic questions. By earning Kinzcash, children are able to buy items for their pets, including food. These examples show only some of the many different ways students are engaging in digital learning spaces that have potential implications for a technology-

enhanced classroom. Even from this brief discussion, it is apparent that digital learning spaces are multifaceted.

## 1.2 Research Questions

The main purpose of this dissertation is to investigate the learning experiences of grade 6 ELL students within a technology-enhanced classroom context, and to better understand the knowledge processes that learners activated in response to the pedagogical moves that teachers employed in their task design. I will also explore how students mobilize both knowledge processes and the *known*.

Prior to introducing my research questions, I will discuss the notion of the *known*, as characterized and employed in this study. In the New London Group's seminal (1996) article, where they coined the term 'multiliteracies,' they argued that in the contemporary context a new approach to literacy pedagogy was required in response to changing global and communicative landscapes. These landscapes are characterized by social, linguistic and cultural (and sub-cultural) diversity and multimodal (e.g., visual and linguistic) communications associated with multimedia and information technologies. The latter, they argued, relates closely back to the former, as it supports and extends cultural and sub-cultural diversity. In this context, they stated that "the languages needed to make meaning are radically changing in three realms of our existence: working lives, public lives (citizenship) and private lives (lifeworld)" (p. 65). It is the different community lifeworlds (home, professional [school], interest, affiliation, [Cope & Kalantziz, 2009]) of learners, as examined through their classroom work and revealed in informal conversations, email communications, and monthly participant literacy activities journals, that provides a better understanding of the *known*, which is a key construct in this study. The New London Group (1996) defined lifeworld as "spaces for community life where

local and specific meanings can be made” (p. 70). Increasingly included amongst these community lifeworlds are the informal (interstitial) learning spaces where K-12 students engage in meaning making such as Fan Fiction websites (see Black, 2008), online chatrooms (see Lam, 2004) and World of Warcraft (Nardi, 2019). In lifeworlds such as these, students are producers, as well as consumers, of multimodal texts, using different digital tools and platforms. However, lifeworlds are not limited to digital spaces and include the many different interstitial learning spaces (e.g. within their home or religious community) that K-12 students engage in meaning making. Such lifeworld experiences are often rich and engaging for K-12 students. These experiences have potential implications for the classroom and the question that remains is how schools and teachers should address this and also ensure that learning is relevant.

In their discussion, the New London Group (1996) acknowledged the significance of lifeworld practices and addressed what schools can do. They argued how schools have always played a critical role in determining students’ life opportunities. Therefore, they indicated that in order for learning to be relevant, the learning processes that are used need to “recruit” rather than erase or ignore the different subjectivities, which the New London Group defined as interests, intentions, commitments and purposes that students bring to the classroom. Here, the New London Group also indicated that these different subjectivities needed to mesh with curriculum and with the “attendant languages, discourses and registers, and use these as resources for learning” (p. 72). It is further argued that this is necessary for a pedagogy that opens the potential for greater access. Hence, schools need to incorporate opportunities for students to bring in [recruit and mobilize] their multiple lifeworld knowledge and experiences (practices), their different subjectivities. The *known* includes learner’s lifeworld practices, their subjectivities, attendant languages, discourses, registers (that is, their communicative repertoires), and their

understandings acquired in their multiple lifeworlds. These are the resources for learning that a learner might access if provided with opportunities to do so by their teacher. Therefore, the *known* has the potential to impact the learning that occurs in another learning space (whether school-sanctioned or not). This *known* is unique to each child; it is individual and shaped by the multiple community lifeworld experiences an individual might have. Due to the affordances of digital technologies, entry to different cultures and sub-cultures is more accessible and the traditional *known* that teachers are familiar with is likely to have changed. Students are now bringing in *known* that could potentially include lifeworld experiences in digital learning spaces. For example, students are engaging in Minecraft in out-of-school contexts (see Abrams, 2016) and as a result the skill of using pixelated blocks to construct buildings can be mobilized into a school-sanctioned learning space to complete an assignment.

My dissertation will answer the following research questions:

1. What knowledge processes do learners use in inquiry-based tasks designed by teachers in a grade 6 technology-enhanced classroom?
2. Relative to the knowledge processes used in inquiry-based tasks, in what ways do learners mobilize *the known* (as unique to them) across learning spaces?

In the following chapters I answer these questions, and in the findings chapter (Chapter 5), I also discuss salient and overlapping themes.

### **1.3 Organization of Dissertation**

Chapter 2 reviews the relevant literature and will present the conceptual framework for this study. I begin with situating the study broadly as a sociocultural study, outlining the three theories that will be used as a framework for this study: multiliteracies (New London Group, 2000), and learning by design (Cope & Kalantzis, 2015). I then concentrate on the literature

relevant to this study including 1) inquiry-based learning pedagogies, 2) the changing cultural and linguistic diversity of students in K-12 classrooms (New London Group, 2000), and 3) studies of digital technologies, both in and outside the classroom.

Chapter 3 systematically explains the methodology of this study: the overall approach, site, and participants; elaborates on the data collection and analysis processes; addresses the positionality of the researcher; and finally provides commentary on why this inquiry should be trusted. Chapter 4 introduces the research site (Cypress Hills School), the school vision particularly as shared by the school principal, the grade 6 technology-enhanced classroom, and the participants, and provides necessary background information for the next chapters. In Chapter 5, I present five illustrative examples to answer the two research questions: the knowledge processes used by learners as they engage in their inquiry tasks (answering research question 1), and how particular knowledge processes and related *known* are mobilized between and across learning spaces (answering research question 2). Each illustrative example will be introduced with a vignette to contextualize the case and give a more general overview of the learning activities in this technology-enhanced classroom. In the final chapter, Chapter 6, I draw implications from the findings in terms of theory, pedagogy, and future research. The first part of the chapter provides a summary of the findings and their implications and addresses the limitations of this study. The chapter concludes with a discussion of possible directions for future research.

## Chapter 2: A Literature Review

### 2.1 Overview

This dissertation is broadly situated in a body of research that explores the learning experiences of English Language Learners (ELLs), aged kindergarten to grade 12 (K-12), in diverse technology-rich contexts including out-of-school spaces (e.g., Black, 2008; Cingel et al., 2019; Ito et al., 2013; Lam, 2009; Lam & Warriner, 2012; Thorne et al., 2015; Yi, 2008); as well as studies that address K-12 students' multiliteracies, including digital literacies in the classroom (e.g., Cummins & Early, 2011; Cummins et al., 2015; Holmes & Smith, 2015; Lotherington, 2008, 2011; Lotherington & Jensen, 2011; Lotherington et al., 2009; Lotherington & Paige, 2017; Marshall & Toohey, 2010; Multiliteracies Project UBC, n.d.; Price-Dennis et al., 2015; Rothoni, 2017; Stewart, 2014; Toohey et al., 2015). This literature illustrates the affordances of technology (both inside and outside the classroom) and the rich learning experiences in which K-12 students engage. As well, in recent years, research has noted how students engage in inquiry-based learning (e.g., Clifford & Marinucci, 2008; Coiro et al., 2016; Frieson et al., 2015) and often use technology to support these approaches to learning. Scholars have proposed that inquiry-based learning provides innovative learning opportunities for students to explore their questions and make sense of the world. Research has also documented how teachers using inquiry-based approaches intentionally plan and facilitate learning in classrooms (see Clifford & Marinucci, 2008; Frieson et al., 2015). Students in these contexts express meaning using different modes, such as written, oral, visual, audio, which includes using digital technologies as a tool to help with their meaning-making.

As technology has continued to change, the ways by which students are able to express meaning have also changed. As noted in Chapter 1, previous scholarship has focused primarily

on students in digital learning spaces outside of the classroom (e.g., Black, 2008; Black & Reich, 2012; Black et al., 2017; boyd, 2014; Burke, 2013; Jenkins et al., 2016; Ito et al., 2013; Lange, 2014; Lam, 2009; Lam & Smirnov, 2017; Lam & Warriner, 2012; Marsh, 2010; Soclari & Fraticelli, 2019; Yi, 2009). However, research concerning what happens in technology-rich classrooms has been much more limited (see Lotherington, 2008, 2011; Lotherington & Paige, 2017). While these studies highlight the rich practices that occur in out-of-school contexts, little is known about the potential impact these learning experiences might have in the classroom. Scholars such as Hull and Schultz (2002) have asserted a need to connect or bridge school and out-of-school worlds. To that end, this dissertation, a study of a technology-enhanced classroom, extends our understanding of elementary-aged ELL students' learning experiences in school and lifeworlds.

The notion of bridging school and out-of-school literacies is not a new one. However, due to the affordances of digital technologies, students are bringing to the classroom another set of the *known*, which contains the lifeworld experiences such as experiences in the digital world, that K-12 educators may not be aware of or be familiar with. My study provides a richer understanding of innovative learning experiences that incorporate inquiry-based learning approaches designed by teachers (and often co-designed with their students) that bridge multiple lifeworld and school contexts.

It is important to note that in provinces across Canada, ministries of education are incorporating opportunities within curricula to address 21<sup>st</sup> century competencies (see Alberta Education, 2011a; Ontario Ministry of Education, 2016). These curricula focus on building digital and technological fluency (see Alberta Education, 2011a), encouraging teachers to consider the attitude, skills, and knowledge needed for students to be successful in learning and

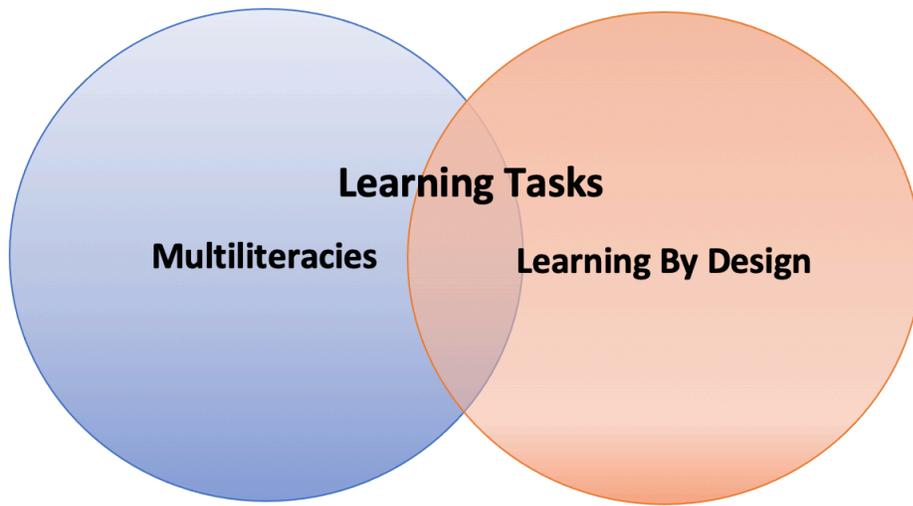
living. In other words, provinces are moving towards developing competencies rather than skills. Such competencies encompass more than just skills or knowledge but rather an ability to mobilize and apply skills and attitudes to meet different demands in different contexts (OECD, 2003, p. 4). Therefore, teachers are getting students to engage in tasks designed as part of the teacher's reflexive pedagogy (Cope & Kalantzis, 2015), that allow students to transfer their knowledge to different contexts and put both meaning and knowledge to work effectively in appropriate contexts. These competencies begin in the home environment and continue into later life (see Province of British Columbia, 2020a).

Although this curricular shift mandates K-12 educators across the country to better prepare their students for the future and a constantly changing landscape, how this is taken up in each classroom depends on the teacher and their unit of work and task design. In the next section I introduce my theoretical frameworks in relation to understanding how K-12 educators might be taking up these curricular reforms in their classrooms.

## **2.2 A Theoretical Framework Introduction**

In this dissertation, I study in-school learning experiences of ELLs in a grade 6 classroom as reported by the learners. To examine the learning experiences that ELL students had as motivated by the teacher designed tasks in this technology-enhanced classroom, I use the following theoretical frameworks: multiliteracies and learning by design. Figure 2.1 illustrates the interrelationships among these frameworks:

**Figure 2.1:** *Theoretical Lens*



The multiliteracies framework (Cope & Kalantzis, 2000, 2009, 2015; New London Group, 1996, 2000), comprises three components of the Multiliteracies argument: the “why,” “what,” and “how” of Multiliteracies. With the “why,” drawing on the work of the New London Group (NLG) (1996, 2000), it appears that dramatic changes occurring on an everyday basis with regards to identity, work, and citizenship. Therefore, the older practices of literacy pedagogy are out of date, creating the need for a shift in literacy pedagogy. In this chapter and dissertation, though, I focus on the “what” to frame my discussion of the theories of multiliteracies and multimodality. As Cope and Kalantzis (2015) indicate, “. . . it is no longer enough for literacy teaching to focus solely on the rules of standard forms of the national language. . . [it] requires that learners become able to negotiate differences in patterns of meaning from one context to another” (p. 3). They further note that “meaning is made in ways that are increasingly multimodal. . . we need to extend the range of literacy pedagogy so that it does not unduly privilege alphabet representations” (p. 3). This is important because K-12 students are increasingly engaged in a variety of literacies not just alphabet representations in their out-of-

school learning spaces and they are required to engage in a range of different ways of making knowledge, and knowledge processes. Therefore in this chapter, I also discuss the learning by design theory (Cope & Kalantzis, 2009, 2015). In later chapters, I address the “how,” which describes, by analyzing the knowledge processes that students engage in, in their inquiry projects, how teachers design the learning experiences in the grade 6 classroom that afforded the learners a range of engagement in different ways of making knowledge. Teachers in my study were not aware of the learning by design framework, so they did not use it explicitly in their planning or design of inquiry-based projects. However, I have applied this lens to analyze students’ knowledge processes and in turn gain insights into these teachers’ pedagogical moves. Specifically, I have analyzed the activity types and knowledge processes that teachers encouraged in their task design.

### **2.3 Multiliteracies**

In this section I address the “What” of multiliteracies (Cope & Kalantzis, 2000, 2009, 2015) and how this component informs my study. The theory of multiliteracies (Cope & Kalantzis, 2000) enabled a better understanding of the students’ learning experiences that occurred in this technology-enhanced classroom. Also, when considering the notion of multiliteracies, we must also consider that the ways by which individuals express meaning are changing due to the affordances of technology. Therefore, multimodality is also a key component of multiliteracies.

When the New London Group (1996) introduced the concept of multiliteracies, they presented an argument that is still relevant more than two decades later. They argued that traditional language-based approaches to literacy were limited and did not encompass the continued changes in the global landscape, which includes communication changes. The New

London Group's (1996) argument was that literacy pedagogy needed to account for the “. . . challenges of cultural and linguistic diversity” (dialects, languages and registers) and also the “. . . newly prominent modes and technologies of communication; and changing text usage in restructured workplaces” such as new literacies (p. 62). Scholars in the area of multiliteracies such as Lotherington (2011) have furthered this argument, suggesting that recognizing multiliteracies in English language teaching “entails recognizing new genres and communicative needs; re-examining the fabric of the language to situate changing norms and conventions; integrating new modalities; and fostering complex linguistic and cultural identities” (p. 898). Cope, Kalantzis, and Abrams (2017) also contend individuals have more opportunities than before to present, “re(create)” and distribute remixed images, identities and ideas which were not available in the past (p. 43).

It was not effective to consider “literacy” as singular, Cope and Kalantzis (2015) argue, but to consider that this notion of multiliteracies overcomes traditional views of literacy to encompass the many different literacies that individuals engage in on a daily basis. To be prepared for life and the workplace, students are now required to have a repertoire of digital and print literacy practices (Rowse & Walsh, 2011). What we currently know is that students are engaging in virtual worlds, for example, Minecraft (Abrams, 2016), and interacting with individuals in other countries. Students are also using social media (Jenkins et al., 2016) to communicate with their peers: including using emoticons and Netlish (such as lol, ttys) to express meaning (Crystal, 2006). Earlier in this dissertation, I highlighted various examples (e.g., Abrams, 2016; Jenkins et al., 2016, Rowse & Walsh, 2011) that illustrate it is no longer relevant to look at literacy teaching as solely “rules of a standard forms of the national language” (Cope & Kalantzis, 2015, p. 3). Rather, learners in this ever-changing global context need to be

able to negotiate literacies from one context to another and understand that meaning is made in multiple modes (written-linguistic, visual, oral, audio, gestural, spatial and tactile). With this in mind, Cope and Kalantzis (2009, 2015) argued that literacy pedagogy needs to be extended beyond alphabetical representations (also see Kress, 1997). Given this premise, a multiliteracies approach encourages bringing multimodal texts and, in particular, digital technologies into the classroom and curriculum (noting that as previously discussed, there is a shift of curriculum towards developing competencies rather than skills). Therefore, especially in a technology-enhanced classroom where digital technologies are present, the role of the teacher is a crucial one when it comes to designing learning experiences that incorporate opportunities for students to use these technologies.

My research also assumes that all communication is multimodal (Early et al., 2015; Kress, 1997) and all learning is multimodal (Stein, 2008). Kress (2000) argued that communication needed to be reconsidered as a multimodal phenomenon, that no text can only contain one mode, but rather that all texts are multimodal. Acknowledging an increasing dominance of the visual, Kress (2003) also asserted that we were moving from the text to the screen, where the screen included both images and text. It is suggested that this shift to the screen is important in a technology-enhanced classroom where digital technologies are readily available for meaning-making.

If technology provides the affordances for children and teachers to express meaning in a variety of ways, then multimodality is important in a technology-enhanced classroom as students have more ways to engage in meaning-making. In most innovative classrooms, thinking requires multimodality (Potts, 2013). Individuals think in all modes, often moving between different modes: for example, synaesthesia occurs when one mode invokes another, a translation across

modes and systems. For meaning-making to occur, individuals are always translating from one medium to another—a process Kress (1997) has argued is essential. Therefore, in these technology-enhanced spaces, explaining the rich metalinguistic and metacognitive practices of students requires researchers to go beyond just language to analyze and address the range of semiotic resources that teachers and students use to communicate. Since students in technology-enhanced classrooms have access to a range of tools (digital and not) for meaning making unlike other environments.

Multimodality as in comprehension and competence with language through a variety of modes such as image, sound, touch, multi-dimensions, is the principle upon which digital environments work. This principle of multimodality needs to be understood by educators to apply and assess new modes of learning as part of everyday teaching practice.

(Rowse & Walsh, 2011, p. 54)

Clearly, multimodality is not only fundamental for innovative teaching but also significant for out-of-school environments (e.g., Abrams & Russo, 2015; Davies, 2006; Lange, 2014, 2019; Lam, 2009) where K-12 students use a variety of modes such as emoticon usage, creating avatars to express meaning, using textual markers, and creating videos. This notion of multimodality is critical in school-sanctioned learning spaces. For example, in a technology-enhanced classroom context, individuals express meaning in a variety of ways, including traditional paper-based texts, digital text, videos, and music. The technologies (e.g., SMART boards, iPads, computers) that are available in these learning spaces provide students and teachers with a number of resources to create and express meaning. For example, by creating a SMART virtual word wall using SMART notebook software, students are provided with a multimodal learning experience where they are given options to express meaning in a variety of ways such as embedding videos

or using images, (Wong, 2014). Technologies such as SMART boards provide these affordances for meaning-making. This is only one example of the many different technologies and affordances available in a technology-enhanced classroom to create meaning.

Critical to my study of a technology-enhanced classroom is the idea of design (*available design, designing, and redesign*; discussed below). Design is also crucial to the concept of multiliteracies and how meaning-making occurs in the modern world (see Cope & Kalantzis, 2009, 2015; New London Group, 2000). When considering digital technologies, scholars such as Rowsell and Walsh (2011) describe how “designing on-screen has not only transformed how we make meaning, but also, transformed ways of constructing and renegotiating our identities” (p. 56). They argue that multimodality comes first because it informs how individuals make meaning and that multiliteracies (as a pedagogy) provide individuals with the tools to accomplish this. One of the affordances of multiliteracies is to enable pedagogies that account for linguistic diversity and the use of multimodality to communicate: both of which apply to my study of a technology-enhanced classroom. I elaborate more on this notion of the teacher as designer in the next section when I discuss the theory of Learning by Design (Cope & Kalantzis, 2009; 2015).

### **2.3.1 Teachers as Designers: Learning by Design**

In classrooms across the country, there is an increased push towards considering inquiry-based learning approaches. In my own work at the school district level, I have focused on supporting teachers and their ELL students in the classroom through an inquiry-based learning lens. From my experiences, I have learned that there are many different approaches to inquiry-based learning; how a teacher designs a learning experience can differ from classroom to classroom. Here, I refer to Cope and Kalantzis’ (2009, 2015) discussion of learning by design to better understand the students’ learning experiences in this technology-enhanced classroom and

how teachers take up inquiry-based learning approaches: for example, what pedagogical moves are used in the grade 6 classroom I studied. More specifically, I examine teachers' task design by analyzing the knowledge processes that were stimulated and practiced by the students in the inquiry-learning tasks. While Cope and Kalantzis (2009, 2015) emphasize the importance of design, it is particularly crucial to understand why the learning experiences occurred in this technology-enhanced classroom, especially as both teachers and students negotiate and renegotiate meaning using a variety of tools (digital or not).

Design also pertains to the “how” of multiliteracies. The New London Group (2000) sees the concept of Design as one in which educators are viewed as both the designers of the learning process and the learning environment. Therefore, to gain a better understanding of the learning experiences that occur in a classroom, a good starting place is to look at knowledge processes (activity types) that students activated when engaged in tasks since it will provide insights into teacher task design. Innovative learning occurs when teachers are intentional and encourage a variety of activity types to meet the learning needs of both their ELL and non-ELL students; it also includes a sound balance among activity types with which teachers might didactically teach concepts which scaffold the authentic learning experiences later. Further to this discussion, any production or consumption of texts is treated as a part of design, which involves three elements: available design (resources for meaning), the designing (the process of representing and making sense of meaning), and the designed (the outcome of the meaning-making that occurs).

Designers or meaning makers are transformed during this design process as their identities are renegotiated and reconstructed. However, teachers and students need a language to explain the forms of meaning represented in this design process—language the New London Group (2000) refers to as a *metalanguage* (or a language that allows teachers and students to talk about images,

text, and meaning-making). This metalanguage is required and needed to explain and describe the conventions and patterns of meaning of the six modes of meaning: linguistic, visual, audio, gestural, spatial, and multimodal. Multimodal is considered most crucial because it relates to all modes of meaning in a dynamic relationship. That is, all meaning-making is arguably multimodal (see New London Group, 2000).

Cope and Kalantzis (2009, 2015) extend on the work theorized by the New London Group (1996, 2000) by expanding and building on the “how” of multiliteracies. They emphasize that the multiliteracies approach comprises a process of teaching and learning that goes back and forth, between and across, various knowledge processes and pedagogical moves. Building on the four components of the multiliteracies pedagogies as articulated by the New London Group (1996, 2000), Cope and Kalantzis (2009; 2015) have extended the notions of situated practice (*experiencing*), overt instruction (*conceptualizing*), critical framing (*analyzing*), and transformed practices (*applying*). As they apply these notions to curriculum practices (the “how” of multiliteracies), they translate these notions into what they term knowledge processes. Knowledge processes are activities an individual does in order to know (Cope & Kalantzis, 2015; Kalantzis & Cope, 2020). Knowledge processes also describe a range of ways of making knowledge. However, they also argue that no matter what terms are used to categorize learning activity types, the crucial idea in a multiliteracies and learning by design approach is that learning involves this notion of “weaving” across different pedagogical moves. As Kalantzis et al. (2016) explain,

When learning is by design, to borrow a musical metaphor, these processes of knowledge become “movements.” There is no necessary order to these movements, nor need there be

for in any one moment or sequence of learning activities. However, the concept of movement is intended to indicate an intrinsic dynamism. (p. 61)

When looking at this notion of design and how teachers design sequences of activities for learning, Cope and Kalantzis (2015) argue that “pedagogy is the design of learning activity sequences. Two questions arise in the process of pedagogical design: which activities to use and in what order?” (p. 17). They add that this concept of learning by design is a classification of activity types; for the purposes of this dissertation, such a classification is a very helpful conceptual framework, especially when examining and analyzing the learning experiences in a technology-enhanced classroom.

In the chapters to follow, I refer to these knowledge processes (*experiencing*, *applying*, *conceptualising*, and *analyzing*) to better understand the related activity types and pedagogical moves that occur in my research site. *Experiencing (the new and the known)* is the knowledge process that involves learning that draws on learner lifeworld experiences: as such, it connects to the real world and personal experiences, personal interests, community background. As I have previously discussed briefly in Chapter 1, I am particularly interested in gaining an understanding of the *known*. Here I seek to better understand the learner’s *known* and how the students in this classroom mobilize their *known* across learning spaces (which answers research question 2). *Conceptualizing (with theory and by naming)* occurs with the development of abstract concepts or theory. *Analyzing (critically and functionally)* is the knowledge process that involves learning: that is, students are reasoning and providing explanations. Finally, *applying (creatively and appropriately)* occurs when students take the knowledge they have learned in one context and extend/apply it in another one. Here, learners will draw on their *known*, which I discussed in the previous chapter as resources for learning a learner might bring into a classroom,

this includes their lifeworld experiences, knowledge, collective memories and communicative repertoires, depending on the knowledge processes targeted by their teachers. For example, when a teacher implements the knowledge process of *experiencing the known*, students will draw on related *known* including their experiences outside of the school-sanctioned learning space, such as the competency of searching for informational videos on YouTube. Here, students are mobilizing their knowledge across learning spaces into the classroom.

I now explore the literature pertaining to the learning by design framework. First, I discuss a study by Karchmer-Klein et al. (2017), which analyzes how nine middle-school teachers designed instruction and integrated technology into their classrooms. In this study, Karchmer-Klein et al. examined patterns evident with regards to how middle-school teachers, who valued technology-integration, designed instruction that utilized digital technologies such as apps. The study took place in a private all-boys school in the United States. All teachers were required to have Grade 6 to 8 students use iPads as a supplemental tool to their typical instruction. The findings from this study indicate that teachers' designed tasks included incorporating multiple knowledge processes, but no consistent sequencing patterns were identified except that every single teacher used *experiencing the known* to introduce a lesson. Karchmer-Klein et al. (2017) also noted that teachers leveraged multimodality with students to review and introduce new topics. Part of the teachers' instructional design included flipping the classroom: that is, engaging students with experiencing content at home. In this way, teachers were able to focus on engaging their students in *analyzing* and *applying* knowledge during school hours. However, the researchers argue that "teachers must be well versed in sound pedagogical decision making and use that knowledge to identify activities that encompass appropriate digital and nondigital tools" (p. 99). This study also illustrates how the learning by

design framework can help researchers to better understand what was occurring in a school-sanctioned space: in particular when it came to how tasks were designed. For example, as teachers used a variety of activity types in their task design and not necessarily in a set sequence, it could be reasoned that teachers did this because they were flexible with their task design and utilized a variety of activity types based on their learning intentions.

In other learning by design research, Abrams (2015) explores the knowledge processes that 23 in-service educators activated in an online participatory learning environment (backchannelchat.com). This cohort of educators attended graduate classes that focused on technology-integration and participatory practices in middle and high schools. Abrams' findings indicate that these educators' online discussion "revealed a developing reflexivity and honoured a culture of collaboration, resilience, openness, multimodalities, and agency" (p. 41). Teachers in this online environment drew on their experiences as both graduate students and middle/high school teachers (*experiencing the known*) and reflected on practice in terms of established institutional norms as well as educational theories. These educators also *apply creatively* and *apply appropriately* even with constraints of curriculum as they looked at ways to include online programs (e.g., Khan Academy) and also worked collaboratively to integrate and experiment with new ways to teach.

Hibbert, Ott, and Iannacci (2015) highlight ways in which educators used different knowledge processes to 1) gain a deeper understanding of pedagogy and 2) to plan for their students. These researchers examined the pedagogical moves used by educators when teaching Shakespeare and working with a "cloud" curriculum, which they explain as a "a generative, flexible and participatory space where learners, educators, developers are integral in the process of 'curriculum making'" (p. 127). One use of knowledge processes (in this case, *experiencing*) to

analyze this prototype curriculum was to rewrite Shakespeare's plays into accessible language so that they were scaffolded for all learners. The researchers also found that there were many opportunities to *apply* learning (e.g., use Animoto to create a scene or Audacity to record a dialogue of what characters might have done in a different circumstance). The results of this study clarify that this particular prototype might encourage students to activate a variety of knowledge processes which could potentially support their learning. However, the researchers analyzed only the "stand alone" digital e-magazine prototype, which did not have actual participants. It is therefore hard to draw conclusions with regards to the "actual" learning experiences and implications these knowledge processes had on the learning.

The final study I discuss here using the learning by design framework is that of Pandian and Baboo (2015), who explored this learning by design framework in a Malaysian context with both literacy and science teachers. These researchers describe the learning context of Malaysia as "traditional," with a focus on paper and pencil literacy activities in school while in the out-of-school contexts, students were engaged in a wide range of rich literacy practices involving Facebook, YouTube, and virtual worlds. What is clear from this study was that these students' digital learning lives (to use Sefton-Green's [2012] term) clearly demanded a shift and a re-examining of what was occurring in schools. In the case study of English literacy, two teachers designed learning materials which encouraged students to explore the local experiences presented in their village and town. These teachers sought to activate the knowledge process of *experiencing the known* by drawing on their students' prior understandings and local community. As a result, students were drawn to this project. These teachers incorporated opportunities to visit a fishing village and then asked their students to make comparisons between living in a village versus a town. The project also included students engaging in conversations with town folk and

taking photographs of different facets of life in the town. The final project required students to create a model of a dream town. What was relevant to my own study from this particular discussion was the intentional design of learners' usage of different knowledge processes to strategically create an innovative learning experience which was relevant to these Malaysian students. For example, *experiencing the known* involved bringing in experiences of living in a town, *and applying creatively* had students apply their knowledge of both a town and village to create their own dream town. The notion of knowledge processes helped me to better understand the learning experiences of these Malaysian students and the learning experiences of Grade 6 participants in this technology-enhanced classroom, as well as gaining insights into the pedagogical moves made by the teachers.

In the sections to follow, I review literature that address 1) inquiry-based learning pedagogies, 2) the changing cultural and linguistic diversity of students in K-12 classrooms (New London Group, 2000), 3) studies of digital technologies, both in and outside the classroom, and 4) recognizing the problematic nature of digital technologies, as they influence multiliteracies. In the section below, I examine the inquiry-based work done by the Galileo Network (Galileo Educational Network, 2020) which influenced the learning experiences in the school district in which this study was conducted.

### **2.3.2 Inquiry-based Learning**

Early and Kendrick (2017) contend that, when reconsidering the “pedagogy of multiliteracies,” inquiry-based learning approaches hold great potential, especially with a well-designed and highly supported inquiry that emphasizes pedagogic design and linguistic diversity. As curricula across the country (and school districts) shift their pedagogies to inquiry-based learning approaches (see Ontario Ministry of Education, 2013a; Province of British Columbia,

2020b), and educators consider the notions of “Big Ideas” and “Essential Questions” (see McTighe and Wiggins, 2013), inquiry-based approaches are becoming increasingly prevalent in K-12 classrooms across the country.

According to the literature (see Clifford & Marinucci, 2008; Frieson et al., 2015), inquiry-based learning is a pedagogy in which the teacher plays a key role in facilitating the learning experiences. In my experiences as a K-12 educator, teachers need to be open and flexible when setting up any inquiry-based activity. Educators are arguably researchers as they are always attuned to their learners’ questions and searching for potential learning opportunities in their classrooms. These teachers are intentionally designing learning tasks guided by students’ interests and wonderings. This intentionality provides students with the agency to explore their understandings and questions: this is the core premise of inquiry-based learning.

Clifford and Marinucci (2008) explored an intentionally designed inquiry-based learning opportunity in a grade 5 classroom in Alberta. In order to teach classroom chemistry, Sue, the teacher, recognized a learning opportunity after hearing about a recent Indonesian earthquake and tsunami, and she capitalized on that to create a class inquiry. Sue presented the following essential question to her students, linking it to the classroom chemistry unit: “Why were Canadian troops delivering equipment to desalinate water? Why can’t people drink salt water anyway?” (p. 678).

During a classroom discussion, Russell, a student, mentioned he had recently read in the newspaper about an American scientist at Johns Hopkins University who had discovered a way to purify water in one step using a powder (PUR). He suggested to his class that they find out more about that. In this example, a question or problem was established (e.g., purifying water to make it drinkable), and the students began an exploration facilitated by their teacher. As Clifford

and Marinucci (2008) highlighted, the inquiry process followed student interests and was adapted based on what occurred. Though experts were often a part of this process, in this case, seeking expertise went beyond the school (e.g., Russell emailed the Johns Hopkins University scientist and asked questions).

One key message in Clifford and Marinucci (2008) was how often a common misconception arose: that when students engaged in inquiry, academic rigor was no longer present. But this, they argued, was not the case. When students engaged in inquiry, they not only covered the curriculum but often extended their learning beyond curricular expectations. In other words, the process is both authentic and rigorous. Clifford and Marinucci add that in order for students to understand how the powder (PUR) worked, they needed to think like chemists. Inquiry-based learning led to an authentic, engaging, and rigorous learning experience for these grade 5 students.

### **2.3.3 K-12 Classrooms: Cultural and Linguistic Diversity and Digital Technologies**

As mentioned in Chapter 1, Canada has seen a steady increase in population due to immigration (Statistics Canada, 2018). Because of this influx in new immigrants, K-12 classrooms are increasingly more culturally and linguistically diverse. Due to this changing global landscape, research such as the current study are significant. This study aims to deepen our understanding of the learning experiences multilingual students engage in, and experiences K-12 educators encounter on a daily basis. From previous research, we know that multilingual students tap into their various Funds of Knowledge (Marshall & Toohey, 2010), create Identity Texts (Cummins & Early, 2011; Cummins et al., 2015; Early & Marshall, 2008), and use the full range of their communicative repertoires. These students bring their *known* into these school-sanctioned learning spaces, including their various languages and prior experiences (Cummins et

al., 2015; Naqvi et al., 2015), grandparent stories (Marshall & Toohey, 2010), and media experiences (Dyson, 2001).

The studies reviewed in this section were selected for several reasons. First, they highlight the diverse learning experiences in multilingual K-12 classrooms. This is also the case in the grade 6 technology-enhanced classroom highlighted in my study: where, due to the affordances of technologies, students engaged in rich learning experiences. Second, each study touches on important concepts that informs my own research and are present in this technology-enhanced classroom, especially when it comes to the notion of task design.

In Early and Marshall's (2008) case study of adolescent English Language Learners the concept of multimodality was central. In two transitional English classes in a Vancouver high school, the classroom teacher used a mandala design as a mediating tool to help her students interpret literary texts. This activity allowed students a choice about the aesthetic creation of the mandalas; however, structure was also provided (e.g., the final product was done in a group and had to contain a short story interpretation, according to the criteria given). The findings indicated that cooperative learning, the student usage of L1, and the multimodal approach to learning all contributed to the academic success of these ELL students. Of significance to my research is the concept of transmediation, presented in this study. Also significant is the usage of the L1, one of the *known* and a linguistic resource, that students in this classroom had access to. However, for ELL students who are less proficient in their L1 or more proficient in English-questions arise about the *known* available to these students and the potential implications these *known* have on classroom pedagogy. My study explores this idea further.

In Marshall and Toohey's (2010) study, a teacher's intentional task design is highlighted. Grade 4 and 5 English Language Learner (ELL) students were asked by their teacher as part of

their social studies unit on immigration to collect parents' or grandparents' stories about their journeys to Canada. Students were given MP3 players to take home and asked to "collect" grandparents' stories. These stories were narrated in their language of preference. The findings from this study showed how students were given an opportunity to tap into their Funds of Knowledge (Moll et al., 1992) as well as an opportunity to create Identity Texts (Cummins et al., 2015) which empowered them and provided a sense of ownership (e.g., the researchers noted that the students felt it was important to get the stories "right," as these were their grandparents' stories). The teacher intentionally designed a learning opportunity and linked it to the curriculum. "Intentional" design is significant in K-12 classrooms because such intentionality creates engaging learning experiences that meet learners' needs. Building on this notion of intentional design, my study extends our understanding of the lifeworld meaning and practices students bring into the classroom. A notable research gap exists in our understanding of how students bring their informal knowledge of technology into the formal learning spaces of the classroom but also the *known*, such as grandparent stories, which students are familiar with and mobilize into the classroom.

Studies such as Marshall and Toohey's (2010), we learn about the importance of experiences that ELL students have in non-sanctioned (interstitial) learning spaces. These students (ELL or not) do not come as empty vessels, but rather have experiences with family and friends that might or might not impact the learning that occurs in the classroom. In Marshall and Toohey's (2010) study, digital technologies (e.g., MP3 players, computer recording and CDs) were used as part of the creation of what might arguably be referred to as Identity Texts (Cummins & Early, 2011), although not a term used by the researchers. The researchers also noted that students needed a great deal technological help to complete their stories. Because

Marshall and Toohey's (2010) study is not recent and digital technologies have continued to change (e.g., with easier to use devices and user-friendly software), one wonders if the findings would be different now if the same study took place in a technology-rich environment where students regularly used a variety of technologies and, as a result, were digitally proficient. Also, in technology-enhanced environments, students have many options for meaning-making, not just digital ones. In Marshall and Toohey's study, the teacher simply designed a task that provided digital tools for her students to use. Did this limit their meaning-making options? When I present my findings, I consider intentional task design and the implications it has for learning.

Another design notion, remixing, is also potentially important in technology-enhanced classroom settings where a variety of modes is available and opportunities for this can occur. A study by Dyson (2001) that pertains to remixing recounted key events from two children's case histories: Denise and Noah, ages 6 to 7. Rita, the classroom teacher, asked her students to produce space illustrated facts. In her analysis, Dyson noted that Noah tapped into his prior experiences and "situated the current task within his regular practice of constructing visually dramatic adventures" (p. 21). For example, seeing the title of a book, *Space Case*, reminded him of a television show with a similar name. He took the idea from this television adventure and reshaped it to use for his class assignment. In another key illustrative event, Noah adapted portions of the video game *Donkey Kong Country 2* and the book, *Little Bear*, to write his own story. Noah appropriated *Little Bear's* story for his tale about *Donkey Kong*. Dyson concluded that Noah's story writing included "recontextualizing material from diverse sources" (p. 28). Alternatively, Denise, another participant, loved to sing, and she appropriated discourse features similar to poetic texts or musicals (e.g., repetitive phrases, dramatic dialogue and rhyme) which

reflected the songs she heard on the radio. She also incorporated elements of revoiced utterances linked to texts that were previously shared in her class.

Dyson's study illustrated the ways that children tap into their *known*, which includes their collective memories and lifeworld practices, to make sense of the world and engage in meaning-making. Like the students in Dyson's study who tapped into their *known*, remixed and reshaped ideas from other social contexts, students in a technology-enhanced classroom could also be engaging in similar practices. Dyson's study urges researchers to continue to extend our understandings with regards to how people move ideas from informal learning spaces into the classroom. Collier's (2018) discussion about remixing indicates how Dyson's work (2003) shaped her understanding of the concept of remixing. Dyson's study has also shaped my understanding of how students move ideas from an informal learning space into a formal learning context.

Abrams and Russo (2015) have described the layered literacies of adolescents in two different social contexts, a library afterschool program and a K-12 classroom. In the afterschool program, the research site was the "Teen Room," a gaming area that restricted access to adults and small children. Tiffany, one of the participants in the study, appeared to move seamlessly among her layered literacies. For example, she would play video games, take phone calls, answer text messages, surf the internet, engage in social media, and finally interact with traditional print-based texts, moving among these activities fluidly. This seamless layering of literacies is important as it demonstrates not only the affordances of digital technologies, but also how effortlessly youth are moving between learning spaces.

Layered literacies were also observed in New York City middle school STEM+ classes (Abrams & Russo, 2015) where grade 7 and 8 students used *Portal 2*, a puzzle strategy game.

The teacher applied the game and its ideas into his STEM+ classes by designing tasks that taught English, math, and technology. The findings from this research showed that the students were engaged in and excited about their learning. The teacher also noted that students had a strong grasp of the concepts after evaluating his students using a paper and pencil assessment. Abrams and Russo argue that when students were provided with agency they would naturally layer their literacies across different contexts.

According to Abrams and Russo (2015), students were given opportunities to use different modes to engage in meaning-making. However, little is known with regard to how the teacher designed his lessons and the process undertaken to do this. Also, from the discussion, it appears students were provided little opportunity to self-explore personal questions that were not related to the set tasks. My study extends this research to address further our understanding of K-12 students' learning processes and their mobilization in technology-rich environments.

Unlike the other research discussed in this section, but of great importance to my current study is Lotherington and Paige's (2017) action research project of Joyce Public School. The initial idea for this project originated from Principal Paige's vision for her school to not be restricted by provincial requirements. Principal Paige transformed her multilingual school by building a strong school identity, championing success, incorporating opportunities for technological innovation, focusing on both effective pedagogies and programming, and perhaps most importantly, nurturing outstanding teachers (e.g., allowing opportunities for teachers to be collaborative learners and providing professional learning to enrich learning in the classroom). Recognizing an opportunity, Principal Paige also invited researchers at the university to partner with her school. Perhaps my most valuable takeaway from this study is not the innovative learning that occurred, but rather the role of the principal in shaping a school culture that

supported teachers to strategically and intentionally create innovative learning experiences for students. Unlike other studies I have read, the focus was not on just one classroom but rather an entire school culture where the instructional leader was instrumental in ensuring that “certain” types of learning experiences occurred. My own study builds on this notion that innovative learning experiences occur when there is intentionality and the right school culture.

All of the studies discussed in this section argue that it is critical for educators to better understand their students’ *known*, as these understandings have significance when it comes to making decisions about what knowledge processes (Cope & Kalantzis, 2015) teachers intend for their learners to practice in their task design. These studies differ from the following study as I examine how the *known* is mobilized across learning spaces. As discussed previously, the New London Group (1996) introduced the notion of lifeworlds, the community life spaces where both specific and local meanings can be made (p. 70). They argued that the affordances of new multimedia have the potential to provide individuals with the opportunity to find their own voices and a greater autonomy for different lifeworlds such as virtual communities online. As many K-12 students (see Abrams, 2016; Black, 2008; Lam, 2004; Yi, 2008) participate in these virtual communities online, the New London Group (1996) suggested that there is a movement that occurs among lifeworlds and there is a blurring of boundaries where there are “people entering and leaving, whole lifeworlds going through major transitions, more open and productive negotiation of internal differences, freer external linkage and alliances” (p. 71). This blurring of boundaries suggests the potential for multilayered lifeworld practices and knowledge to be mobilized from one learning space into another especially due to the affordances of digital technologies which the current study will explore.

### **2.3.4 K-12 Students in Digital Interstitial (Non-Sanctioned) Learning Spaces**

Many researchers have explored K-12 students in a digital environment (e.g., Abrams et al., 2019; boyd, 2008; boyd, 2014; Buckingham et al., 1999; Cingel et al., 2019; Erstad, 2011; Jenkins et al., 2016; Levy, 2011; Marsh, 2011, 2013; Nardi, 2019; Rowsell & Burke, 2009). These researchers did not focus on just ELL students. Multilingual children's literacy practices in digital environments are unique, and these individuals often utilize their multilingual abilities (e.g., communicating in more than one language) to communicate with their peers and engage in meaning-making. Previous literature showcased the complexity of language used in online spaces (e.g., Lam, 2004; Lam & Smirnov, 2017) where K-12 students engaged in multifaceted and complex textual exchanges that combined a variety of languages and modes (e.g., visuals and written). Scholars including Warschauer et al. (2010) have claimed there are many genres and varieties of online Englishes, similar to the diversity found offline. The same researchers have argued that these new forms of online English are salient for highly interactive forms of computer communication such as instant messaging (IMing) and text messaging. "Scholarly analysis of. . . [computer-mediated communication] also [has given rise] to . . . discussions about electronic text as a new hybrid communication mode that [blurs] the distinction between spoken and written language" (Warschauer et al., 2010, p. 492). Since these varieties of hybrid electronic texts are significant, the impacts of these literacy practices need to be explored further, especially in the context of a formal schooling environment.

In a technology-enhanced classroom, chatrooms and discussion forums are prevalent in learning management systems, and these spaces provide students with possibilities to engage in unique textual exchanges. Several noteworthy studies have also centred on ELLs in a digital environment (e.g., Black, 2006; Lam, 2003; Thorne et al., 2009; Yi, 2005). In the following

discussion, I primarily focus on studies that consider learning as a social practice as this informs the current study. As well, because they specifically address ELL learning experiences in a digital environment, these studies help inform my own research into technology-enhanced classrooms.

My project was partially inspired by Lam's (2003) dissertation work as it offered a glimpse into the complexity of literacy practices (e.g., codeswitching between various different languages in chatrooms) that occurred in the digital learning space. Lam conducted various studies, including her seminal dissertation work, that have significantly contributed to the literature within the area of ELLs participating in digital environments. Lam's research focused on Cantonese speaking bilingual adolescents who were involved in three different online learning spaces. Each case study provided the reader with an in-depth look at an adolescent curating a digital textual identity (Lam, 2000, 2003, 2004). There were four key case study participants: Almon, Lee, Yu Qing, and Tsu Ying. All the research subjects participated in different online social contexts (e.g., J-pop website community, bilingual chatroom, Manga website community). These participants used their communicative repertoires (Rymes, 2012) to communicate in a variety of different learning spaces. Students such as Almon also interacted with his transnational peers. He gained confidence and found legitimacy which he did not necessary find within offline learning spaces.

Lam's (2009) later research extended our understanding of these digital learning spaces by exploring the IMing activities of an immigrant adolescent girl, Kaiyee. Lam's study presents a fascinating analysis of a trilingual girl who indexed her identity using a variety of textual markers which included emoticons, standard American English, hip-hop English, Shanghainese, and Cantonese. In this particular study, Lam addressed emoticon usage. For example, she noted

the “upright faces” in Kaiyee’s exchanges; her findings indicated this signified an Asian influence. Previous research (Lotherington, 2011) has illustrated that emoticon usage is often cultural and that different emotions can signify a particular cultural influence; this was reflected in Lam’s (2009) results. Lam’s research also illustrates how K-12 multilingual students were accessing linguistic and textual resources from a variety of websites and online communities, in one case (see Lam, 2004) finding that her participants were more confident when using English at school.

As Lam’s studies addressed the out-of-school social context and not the school context, it is difficult to draw any conclusions with regards to English language proficiency in the classroom context. Also, as Lam (2009) notes,

. . . further research conducted at diverse geographical sites with participants who come from a variety of migratory backgrounds, nationalities, ethnicities, socioeconomic statuses and genders would allow us to understand the different ways and extend to which youth migrants negotiate transnational relationships and literacy practices through the use of new communication technologies. (p. 395)

She also recommended that conducting empirical studies with a diverse range of participants would give a broader picture of the literacy experiences of youth and children of immigrants. In response to Lam’s research, my study extends our understanding of literacy experiences in classroom contexts.

Also providing insights into ELL out-of-school literacy practices, Black’s (2006) ethnographic case study examined ELLs in an online fan fiction community. Black (2008) noted that these communities engaged in a social practice of *remixing*, defined as taking cultural artifacts and manipulating and combining them to make a new kind of unique creative blend.

Youth converged in this online space to engage in remixing, textual poaching (a term used by Jenkins, 2013), meeting peers, and discussing common interests. Jenkins (2013) contends that

. . . fans construct their cultural and social identity through borrowing and inflecting mass culture images . . . [they] recognize that their relationship to the text remains a tentative one . . . [they] display a particularly strong attachment to popular narratives, act upon them in ways which make them their own property in some sense, they are also acutely and painfully aware that those fictions do not belong to them and that someone else has the power to do things to those characters that are in direct contradiction to the fans own cultural interests. (p. 23)

My study explores how the learning experiences that occur in interstitial learning spaces, such as the ones that Black describes in her research, potentially mediate the learning experiences in the classroom.

Minecraft, another interstitial learning space, provides participants with opportunities to create buildings, such as homes or stores, using pixelated blocks. Players can also grow vegetables, spawn animals, and essentially create their own community. Minecraft as a learning space was explored in Abrams' (2016) article, detailing the case study of an eleven-year-old multilingual girl, Anita, who played Minecraft. As Minecraft also has a game component, participants are able to switch between various modes, including a creative mode (which Anita selected) that does not allow zombies to kill the creator's avatar. Abrams described Anita's Minecraft world, which included a bakery with a cake-making machine, a pet cemetery for her virtual bunny Tonta (who passed away), and a pet sanctuary for her virtual pets. She also discussed the wide range of emotions that Anita felt with regards to the game-world events, for example, being upset about the death of her bunny Tonta as reflected in her comments: "I know

it's a game but . . .” and “the animals were part of my family in Minecraft” (pp. 504-505).

Abrams asserted that although Anita knew her experiences in Minecraft were in a digital learning space, the boundaries between the offline and online experiences were blurred. In that respect, this study of Anita's literacy practices in Minecraft illustrates the complexities of these digital informal learning spaces. Although beyond the scope of this study, many questions still remain about the implications of spaces like Minecraft for the K-12 classroom context. If Anita was carrying these experiences, which are a part of her *known*, this ultimately has implications for the classroom and other learning spaces. The fact that Minecraft, although popular outside of the classroom, is also being utilized in the classroom context (e.g., Bos et al., 2014; Kuhn & Stevens, 2017) also has implications for school-sanctioned learning experiences.

Also looking at an informal learning space and raising questions about the implications of these spaces for the K-12 classroom, Lange's (2014) ethnographic study of YouTube investigated various ways the participants engaged in this video-sharing website and created their technical identities. YouTube allows participants to share, upload, comment, and add to favourites videos. Lange's participants included different ethnicities and age groups (adults to children). Her participants had a wide range of interests and abilities when it came to the YouTube participation. Some participants were consumers (e.g., casual watchers of YouTube videos) and others were producers (e.g., creating content for YouTube). Being a consumer of YouTube did not necessarily equate to a lack of technical skills. For example, Anna, one of the participants, although only a consumer of YouTube considered herself to be “technical” and wanted to develop her skills further by taking programming and computer science classes at college. When participating on the internet, she preferred blogging and using Facebook.

Lange's (2014) data analysis also discovered a variety of YouTube genres in which her participants participated. The most popular genres among her participants included video blogging, comedy, sketch, lip-synching, hanging-out-at-home, and personal events videos. While Lange's ethnographic study illustrated the multifaceted nature of YouTube as a learning space, my study of a technology-enhanced classroom study furthers our understanding of this learning space by exploring how elementary students mobilize their lifeworld practices when searching for information on YouTube in different learning spaces. In particular, the majority of Lange's participants were older (adolescent and above) whereas my study addresses how YouTube is taken up in elementary classrooms. In the next section of this chapter, I will briefly discuss and acknowledge the problematic nature of digital technologies.

### **2.3.5 Recognizing the Problematic Nature of Digital Technologies**

The literature has increasingly noted the "problems" with digital technologies. Most notable are issues of equity and access (see Ford, 2018; Darvin, 2018; Darvin & Norton, 2014; Rogers et al., 2018; Smythe et al., 2018). Here, the argument is that technology can bring about "...one of the most -damaging-ways of exclusion" (Castells, 2010 as cited in Rogers et al., 2018, p. 1) due to its central place in the knowledge economy. Exclusions also come in many different forms including exclusions based on race, age, gender, social class and geopolitical contexts. Scholars discuss how exclusion is not limited to complex concerns related to information flows, colonizing forces, languages and access, and the limitations of technologies (see Ford, 2018; Luke, 2018; Rogers et al., 2018) but also includes everyday issues faced by digital youth (Luke 2018). Questions with regards to how to effectively address these concerns and exclusions are predominant in the literature. Scholars such as Luke (2018) view digital ethics as "...the core curriculum issue for schooling" (p. 187). He asserts that educators, scholars, parents, caregivers

and community Elders need to not just “celebrate” emerging digital cultures but rather there needs to be due concern for the ethical issues and concrete consequences. Luke also argues that this discussion should include an examination of ideologies and sources but also relationships between forms of knowledge and global interests (e.g., corporate ownership, profit for information).

With K-12 students, forms of exclusion might include a lack of access to technology but also potentially different understandings of how technology can be used, where individuals might position themselves differently as users according to social class (see Darvin, 2018). In Darvin’s (2018) study, he investigated the different ways that two youth, from different social class positions, developed digital literacy at home and how “...material conditions of the lived existence of these learners shaped their digital literacies” (p. 27). Darvin asserted that these youths’ contrasting dispositions towards technology shaped not only their views of computers, (such as being a source of knowledge in contrast to entertainment or tool in contrast to distraction), but also their perceptions of what different digital platforms are used for (such as YouTube as an educational medium in contrast to being a source for funny videos) (p. 41). Darvin’s findings and discussion highlight the diverse digital repertoires that K-12 students have. His study also illustrates the argument that schools need to become aware of the different and also diverse digital repertoires of their students. Darvin encourages educators to do more to expand but also scaffold these digital repertoires for every learner.

Other scholars have noted that various social contexts can contribute to how digital technologies are used but also how they may marginalize certain individuals and groups (see Snyder & Prinsloo, 2007). As the following study is focused on a K-12 context, questions of equity and access are particularly prevalent in schools and out-of-school contexts for many K-12

students (see Burnett & Merchant, 2017; Darvin, 2018; Warschauer & Matuchniak, 2010). The literature has noted that access is varied from school to school and how in lower socio-economic schools, it is and continues to be challenging to implement digital technologies due to the students' lack of home computer experience and the teachers' lack of experience (Warschauer & Matuchniak, 2010). In these settings, the technical support infrastructures were not always as good or conducive to learning. However, it is also critical to note that Warschauer and Matuchniak asserted that

the large and growing role of new media in the economy and society serves to highlight their important role in education, and especially in promoting educational equity. On the one hand, differential access to new media, broadly defined, can help further amplify the already too-large educational inequities in...society. On the other hand, it is widely believed that effective deployment and use of technology in schools can help compensate for unequal access to technologies in the home environment and thus help bridge educational and social gaps (p. 180).

I acknowledge issues of equity and access in the K-12 context and other contexts (e.g., Darvin, 2018; Dobson et al., 2018; Ford, 2018; Jenkins et al., 2009; Mutonyi & Norton, 2007) but this is beyond the scope of this particular study. Although equity and access are crucial to consider in any study of digital technology in K-12 context, they are less pertinent in this study given that the school was designed and well-resourced with digital technologies by the school district.

Also, problematic with regards to digital technologies is the notion of “fake news” or as discussed in the literature “deepfakes” (see Literat et al., 2020; Yadlin-Segal & Oppenheim, 2020). With deepfakes, audiovisual manipulating artificial intelligence (AI) applications synthesize multiple audiovisual products into one manipulated media, which is usually in the

form of a video (Yadlin-Segal & Oppenheim, 2020, p. 2). These “fake videos” show a person doing/saying something they have never said or done. Deepfakes pose great issues in terms of ethics and the spreading of misinformation. They are also a potential concern when it comes to K-12 students searching for information using online sources such as YouTube. Questions about validity of information (e.g., is this information accurate? Is this information reliable?) and digital citizenship (Ribble, 2011) are illustrated. In Ribble’s discussion of digital citizenship, he highlights nine elements of digital citizenship. It is argued that students need to know these nine elements when using digital technologies. Of significance to a discussion of deepfakes is the fourth element, digital literacy. In terms of this element, Ribble discusses how students need to use their free will to determine and decide what content is good for them or and what content they should avoid. With deepfakes, there is the potential that students might consider this information to be genuine. Some scholars (see Literat et al., 2000) have highlighted how such “fake news” issues can be addressed by explicitly teaching students how to discriminate between what is real and what is not. For example, this might be done by “gamifying” fake news, such as playing a board game (e.g., Fakeopoly) which gets individuals to consider what is a reliable source of information on the internet, Here, students develop applicable knowledge around fake news through ownership and active engagement.

Also, with the emergence of digital technologies, individuals (including K-12 students) are increasingly engaged in social media. Karppi (2018) describes the dangers and underlying issues of using social media platforms such as Facebook. Drawing on a 7 year study, he points out the “darker” sides of Facebook are not necessarily transparent to the average users. For most users of social media platforms, the goal and focus is on connecting with friends and cultivating relationships. As explained in Karppi’s book this user connection is critical to the business model

of Facebook. Karppi also elaborates on how even though connection is important to Facebook “...disconnection, when it becomes a problem for the platform, does not weaken connections but makes them stronger, because the problem of disconnection needs to be solved” (p.122). Of particular concern is how these social media platforms “mine” data and use it in a variety of ways to exploit the user. For example, “Target Facebook Ads” (ads embedded in the Facebook platform) use the information the user has given to the platform to determine the ads they will see. Facebook advertisers have the potential to market to/target these engaged users by demographics, interests and behaviours. Karppi asserts that “...an online platform turns masses into populations by producing their interests and conditioning their interactions” (p. 37). Concerns around privacy and ethics are apparent from Karppi’s discussion. This discussion on social media also illustrates an area where K-12 educators need to be aware of in a technology-enhanced classroom since many K-12 students are engaged in social media platforms in their out- of-school contexts and there is the potential for this to come into the school-sanctioned learning space.

James (2014) explored the shortfalls with regards to the digital lives of her participants. James’ findings addressed issues with regards to online privacy in particular with tweens, teens and young adults. Her participants noted that they had more privacy offline than they did online. James noted in her findings that many of the youth were often blind to the ethical and moral concerns with privacy. In her work, James suggests that one way to address this digital ethics gap is to consider conscientious connectivity which she describes as involving the development of ethical thinking skills and also developing a sensitivity to the issues posed by online life.

In the following section I have discussed briefly some of the problematic issues with regards to digital technologies. As I have already indicated, I am acknowledging these problems

and issues brought forward by previous research and other scholars. However, I am also cognizant and recognizing that many of these issues are beyond the scope of this particular study.

### **2.3.6 A Literature Review Summary**

In K-12 classrooms, ELL students are engaging in rich learning experiences including creating Identity texts (see Cummins & Early, 2011; Cummins et al., 2015; Early & Marshall, 2008) and using digital technologies to support learning (see Abrams & Russo, 2015; Marshall & Toohey 2010). Scholarship on learning has highlighted the role of the instructional leader (e.g. principal) in creating an environment that fosters innovative learning experiences (Lotherington & Paige, 2017) and also explored whether—if teachers intentionally design tasks employing various knowledge processes and/or use digital technologies—there are potential opportunities to bridge multiple lifeworlds and school (see Marshall & Toohey 2010; Pandian & Baboo, 2015). This scholarship also underscores that, as digital technologies continue to change and provinces in Canada shift curricula to place a stronger emphasis on inquiry-based learning approaches, it is increasingly urgent to gain a deeper understanding of these types of learning environments.

In interstitial (non-school-sanctioned) learning spaces, ELL students use the affordances of digital technologies in a variety of ways (see Abrams, 2016; Black, 2006, 2008; Lam, 2000, 2003, 2009; Lange, 2014). These interstitial learning experiences differ significantly from what occurs in school-sanctioned environments. However, these experiences also have the potential to impact what occurs in the classroom as students bring their *known* into school-sanctioned learning spaces. Therefore, it is crucial that researchers and teachers gain a better understanding of what occurs in these interstitial learning spaces.

To better understand the “how” of multiliteracies, I explored the knowledge processes (Cope & Kalantzis, 2015) students activated, which illuminated what knowledge processes teachers potentially targeted in their task design. This enabled me to answer my first research question:

1. What knowledge processes do learners use in inquiry-based tasks designed by teachers in a grade 6 technology-enhanced classroom?

When I examine the knowledge processes that students activated, it also provides insights into the ways that students mobilized their *known* across learning spaces. These insights, in turn, address my second research question:

2. Relative to the knowledge processes used in inquiry-based tasks, in what ways do learners mobilize *the known* (as unique to them) across learning spaces?

In the next chapter, I discuss the research design of my study, the overall approach, and the site and participants. I also elaborate on the data collection and analysis processes, and address the role of the classroom teacher as well as the role of the researcher. Finally, I provide a commentary on the reliability of this study.

## Chapter 3: Methodology

### 3.1 An Ethnographic Case Study

This dissertation utilizes an ethnographic case study approach (Duff, 2008; Merriam, 1998; Stake, 1995; Yin, 2009) to develop a better understanding of the knowledge processes that ELL students activated due to their teachers' inquiry-based task design.

By conducting an ethnographic study, my intent is to gain more insight into the cultural and social aspects of this unique context (LeCompte & Schensul, 2010) by drawing on the perspectives of participants. Examining the social and cultural aspects of learning spaces also reveals the context of the research site (including the school district and school), which supports a better understanding of the influences that shape the learning experiences and teaching practices in this classroom. While the K-12 classroom is a familiar learning space, ethnographic educational research seeks to “[make] the familiar strange” (Heath & Street, 2008, p. 32), which helps to make the social context more transparent. Thus, I investigate multiple perspectives to gain further insight into these participants' experiences and meaning-making processes and to offer a thorough contextualization of this unique classroom. Field observations (both online and offline), interviews (participants, teachers, and administrators), digital and non-digital artifacts, and monthly student participant literacy activity documentation were the main sources of data. One strength of this study is that participants' experiences were documented over an extended time through a variety of means (e.g., interviews, artifacts), adding greater breadth and understanding of the learning experiences in this technology-enhanced classroom context. This study is also unique because it explores and presents a potentially innovative learning possibility that integrates technology into the everyday teaching pedagogy within an elementary school setting. Notably, students drew on their background knowledge, their *known*, when engaging in

teacher designed tasks. As a result they were able to bridge their multiple lifeworld and school contexts.

### **3.2 Gaining Access to the Site and Recruiting Participants**

This inquiry was undertaken in a Western Canadian middle school, Cypress Hills School (pseudonym), located in a multicultural urban centre. It was chosen because the student population represents diverse cultural and linguistic backgrounds and was also chosen because I had not worked there before. For the majority of the students at this school, English was not their first language. Schools across this school district and province have seen an increase in ELL students in recent years with global migration and increases in Canadian immigration (see Statistics Canada, 2018). However, this province funds ELL students for only a limited time, although these students may remain on ESL assessments until they have graduated from this assessment system (this is dependent on the individual school district policies).

The school is situated in a province and school district where large amounts of money had been invested for purchasing educational technology. A learning management system (Desire 2 Learn [D2L]) and Blackboard Collaborate had been purchased for the entire school district. Additional monies had been placed into initiatives to buy SMART boards, laptops, iPads, and other educational software (e.g., assistive technology such as Read, Write & Gold, Dragon Naturally Speaking). This school district had recently acquired Google apps, which all teachers and students could access at the time of the study. All students had access to a school board Gmail account; teachers also had an employee email account. Students could bring their mobile devices to school (e.g., iPads, mobile phones, laptops) and log onto learner wireless networks installed in every school in the district. All teachers within the school district had access to a laptop through the one-to-one laptop initiative many years back. As well, the

province had created several websites offering a number of curricular digital resources (e.g., links to teaching resources and interactive websites for students). These provincial websites were available to both students and teachers. From this summary, it is clear this school was well equipped with digital technologies, part of the reason why this school was selected as a research site.

Educating both staff and students with regards to Digital Citizenship (Ribble, 2011) had become part of the social fabric of this school district. Schools created “Digital Citizenship” plans at the beginning of each school year. Besides administrative regulations to address issues around internet safety, the school board implemented various internet filters to protect students. All of these measures were taken to keep children safe.

Teachers had many opportunities for professional development in this school district using a variety of technologies. In addition to previous webinars inviting guest speakers from around the world on a variety of topics, staff were able to participate in district-wide professional development events such as “App Chats,” where teachers meet and discuss different types of apps, and digital professional development opportunities within D2L (e.g., courses on how to utilize the eportfolios tools in D2L, D2L course-builder courses). Overall, the research site for this study provided many opportunities for both students and teachers to engage with digital technologies.

The focal participants of this study were students in a technology-enhanced classroom who had agreed to participate and who signed consent and assent forms. The majority of students in this classroom were ELL; only two out of the 26 students in this class were identified by the school as not ELL. For these two students, English was their first language and no second

language was spoken in the home. Important to my work as an ethnographer, I had no prior working relationships with the staff members of this school (to be discussed later in this chapter).

Upon obtaining the appropriate permissions (both university and school board ethics), I asked to speak to the grade 6 teachers to explain my study, and then sent out invitation letters (Appendix A) to the teachers for permission to use one of their classrooms as my central research site. The students were taught by many teachers (3 main teachers taught this group of students). During my explanation, I outlined how I was looking specifically for a class that engaged in technology-enhanced activities (e.g., SMART board usage, iPads, computers, Desire 2 Learn) and that focused on inquiry-based teaching practices, which I learned were prominent in the school due to the principal's school vision. The teachers were receptive and expressed their interest in participating in my study.

Once I obtained permission from the classroom teachers, they suggested that I informally observe potential classes for recruitment. My observations took two days; in the end, I chose a class that seemed to be ideal for this study since the students were keen to share, and I quickly formed relationships with many of them. The classroom teachers suggested that, rather than holding a parent and student information night for this classroom, it might be more effective if I created a video that discussed my study and what I was hoping to achieve. The reason was that parental attendance at after-school meetings was often sparse, and teachers found that by communicating digitally they were more likely to gain a response. I shared my video via Google Drive with parents and extended an invitation to them to contact me if they had questions or wanted to discuss the study. Even at this early stage in my study, it was apparent that one of the many literacy practices included sharing information with families via Google Drive. Parents at this school were familiar with the practice and responded quickly to messages sent this way.

During a class presentation to the students, I explained the study and how I was seeking to learn more about their learning experiences both inside and outside the classroom. The students appeared excited when informed they could tell me about their activities inside and outside of class. I also explained that I would be following them from class to class and to not be surprised if I was “hanging out” with them during these classes. All 26 students in the class were invited to join the study; 25 students assented, with parental consent, to be a part of this study.

As is often the case with new immigrant families, English was not be the first language for many parents/guardians. However, I was informed the school had in-house translators present who could potentially call parents and translate important information so that parents/guardians would clearly understand the study. Invitation letters (Appendix A) were sent home with the students after my brief in-class presentation. Following university ethics guidelines, all the participants—students, teachers, and the administrator—provided their signed informed consent (Appendix A).

### **3.3 Data Collection**

This case study of a technology-enhanced classroom employs ethnographic techniques. I collected data between January and June of 2015 utilizing a number of data collection strategies to answer my research questions and help me understand the learning experiences of this classroom. Making strategic decisions about data sources provided me with an in-depth view and conceptualization of my student participants’ experiences, including deepening my understanding of the cultural and social contexts of this classroom. The data also provided me with greater insight into how teachers and students socialized each other into the various practices in this classroom. “Case study research seeks depth rather than breadth in its scope and analysis; its goal is not to universalize but to particularize and then yield insights of potentially

wider relevance and theoretical significance” (Duff, 2012, p. 96). Another strength of case-study research is its ability to deal with a variety of evidence (e.g., artifacts, interviews, field observations). Stake (1995) describes how with methodological triangulation, a researcher looks at multiple sources to make sense of a particular instance; he gives the example of a researcher on the playground who witnesses an incident and the subsequent observation and interviews of both the teacher and a fellow student who witnessed the incident. Yin (2009) also argues that using several different sources of information means the findings of a case study are more convincing and accurate; however, I also add that as an ethnographer, I find different sources of data help me to further understand the perspectives of my participants. As a researcher, I am there to explore the many possibilities and not to find the “one” truth. By using a variety of sources of data, I am also engaging in triangulation or “crystallization” (Duff, 2008). In other words, the following study provides a thorough analysis of the learning experiences that occur in this technology-enhanced classroom.

Before elaborating on the data collection procedures I undertook, it is important to mention that I made many of my decisions based on the age group of the students. I also considered what would be manageable for my participants as well as for me as a researcher, due to the large number of participants.

**Figure 3.1:** *Summary of Data Collection*



The following data collection procedures were used for this study:

**(1) Researcher journal: Monthly documentation of literacy activities by participants.** To gain a deeper understanding of the participants' mindsets (Lankshear &

Knobel, 2006) and their learning experiences, I asked each participant to document their literacy activities in and outside of the classroom and reflect on these activities. To facilitate this process for my grade 6 participants, I used age-appropriate terminology including common terms in an upper elementary classroom such as “literacy activity” or “learning task.” I also referred to this as a “researcher journal” because the students saw and understood themselves to be “researchers.” I initially suggested the following reporting options: 1) sending me an email, 2) keeping a digital journal using Desire 2 Learn, 3) keeping a non-digital journal, and 4) using a digital camera to document their activities. However, the format of this student documentation was open-ended. Regardless of how students formatted their documentation, this data collection method played a number of critical roles in this study. First, documentation provided me with potential opportunities to develop a deeper understanding of the learning experiences and practices that occur in the classroom. Second, I gained insights into my participants’ lives and lifeworlds and what literacy activities (both classroom-based and outside of school) they most or least enjoyed. I followed up this documentation with questions during an interview to gain further understanding of the activities/thoughts/processes that went into students’ meaning-making. Third, as this documentation was an open-ended activity, I found it interesting to see what modes my participants chose, also providing me with a better understanding of their learning experiences. Fourth, as I was not always in the classroom observing, the documentation gave me an opportunity to learn more about what happened when I was not there. What I found with this data source was that my participants did not often share what they learned in the classroom but rather capitalized on the opportunity to tell me about their literacy activities outside of school, which helped me understand their activities in interstitial learning spaces. Many of my participants, in particular the girls, utilized this opportunity to keep up an ongoing

dialogue with me, particularly if they chose email, as the format for their “researcher journal.” I often learned about their families and their thoughts about a wide range of topics (e.g., friendships, community). Some of the girls chose to send me daily pictures of what was occurring in their life. For example, Lsparkles (pseudonym) sent me pictures of what her father cooked for dinner daily and road trip pictures to Banff. She was an avid social media user, so she was used to updating/posting on a regular basis.

**(2) Interviews with Students.** Drawing on Talmy’s (2010) heuristic, I see research interviews as a social practice rather than as a research instrument. In this sense, “the interview is treated not as a resource for extracting data held within a univocal respondent, but as a site for investigation itself” (p. 139). A co-construction occurs between the interviewer and the interviewee during an interview; this means that the interviewer is participant who plays an important role in the talk that occurs. As a result, any of the interviewer’s contributions are subject to the same type of analytic focus as the interviewee’s (Roulston, 2010).

Interviews were an important data source for me. During these conversations with my participants, I was able to clarify, extend, and learn more about their experiences as well as deepen my understanding about the process students went through to engage in meaning-making, including the reasons for their choices to use certain modes over others. I interviewed my student participants three times over the span of the study (beginning, middle, and end) in focus groups. The focus groups consisted of between 4 to 6 students. Before conducting my interviews, though, I had analyzed the individual eco-maps (McCormick et al., 2008) I asked my participants to complete for me. As I will discuss in the next chapter, eco-maps provided me with a better understanding of the social groups in the class. Besides the eco-maps, I also analyzed my field notes. By analyzing both my field notes and participant eco-maps, I gained a better

understanding of the social networks in the classroom, which resulted in the intentional organization of my focus groups into social groupings. As a result, my interviews were more conversational in nature, in comparison to my initial interviews where I had not consulted my eco-map and field notes data, and I believe I learned much more about my participants.

The first interviews were semi-structured, intended to gain background about students' prior experiences, what activities they enjoyed, which modes they preferred to use for meaning-making (e.g., writing, drawing), and any additional relevant information (e.g., technology usage). For the second and third set of interviews, I became more purposeful about how I organized my focus groups to deepen my understanding of certain learning tasks. During these interviews, I asked students to reflect on their learning experiences, discuss their literacy experiences so far, expand on their meaning-making processes, and comment on several topics (e.g., class participation).

My semi-structured interview protocols provided students with opportunities to share their reflections on their learning experiences in this classroom or in the interstitial learning spaces. Often the interviews covered a range of topics that were not part of the original interview protocols. These interviews were relaxed in nature with the participants sitting, standing, or moving around the room as they preferred. The interviews took place in various available spaces in the school including empty classrooms, the staffroom, or the conference room. The interviews were about 30-60 minutes in length. All interviews were recorded via a digital recording device and transcribed by the researcher.

**(3) Classroom observation.** Another substantial data source was classroom observations, fieldnotes being a common practice with ethnographic studies (Heath & Street, 2008). During my observations in the classroom I took extensive field notes, which were key to gaining a

deeper understanding of the social context and the routines that occurred in this classroom. Observation occurred both in the digital environment (e.g., Google Drive) and in the physical classroom environment. The first two weeks of intensive observation allowed me to become familiar with this classroom's routines and practices. During this time, I also observed the digital environment, which took the form of continuously seeking to obtain transcripts from discussion boards and any other "visual" documentation (e.g., screen captures of the digital space) related to my focal participants' meaning-making processes within this digital space. After this initial two weeks, I gained permission from the classroom teachers to visit the classroom at least once a week, three to four hours per week. Depending on school holidays, field trips, and professional development days, I visited the classroom even more frequently subject to negotiation with the classroom teachers. The day of the week I observed varied depending on the week, allowing me to gain a richer understanding of the classroom practices and what occurred. The classroom teachers were always accommodating and essentially allowed me to come whenever I chose. These teachers saw me as a colleague and were in regular contact with me via email to let me know if there were any special events at the school (e.g., a winter celebration of learning). They included me in teacher team meetings, which I attended when I was able to or when appropriate (often they occurred on Fridays after school). In my initial interview with the school principal, she encouraged me to attend these meetings as I would hear more about how the teachers were designing their lessons and programming for their students.

I also documented the interpersonal relationships of participants in the various learning spaces, both school-sanctioned and interstitial. One advantage of observing the classroom is that I gained a better understanding of the social context and was also able to establish a rapport with my participants. Initially, I tried to sit relatively inconspicuously at the back of the room and take

notes. As the study progressed and my relationships with the participants developed, I often sat at the tables at which the students worked. I thought it would take some time for the students to get used to me being in their classroom space, but this occurred relatively quickly. Early in the study during a science class, it was apparent I was a part of the class; the students were deep in conversation about their assignments, and only after an hour did one of them comment and notice I was sitting at their table. In this situation I had just blended into the classroom. I also audio recorded students as they engaged in their various learning tasks when I was present in the class. This audio recording process allowed me to listen to the interactions that I might have missed even when I was present in the classroom or to revisit an event afterwards to gain further insights. In some instances, I conducted impromptu informal interviews with students, asking questions about the modes they were using or their thoughts about their learning. The audio recordings were helpful for formulating potential interview questions for participants with regards to their participation and meaning-making processes. The recordings also allowed me to collect data in situ rather than returning to the class project for a focus group interview weeks after the class had occurred. I also asked permission of my participants (including the classroom teachers) prior to recording anything during class time.

**(4) Interviews with Teachers and Administrator.** At the onset of my study, I conducted a semi-structured interview with the administrator of the school (to be discussed in greater detail in Chapter 4). This interview helped to establish the social context, particularly the school make up, social dynamics, and school vision. It also allowed me to understand how the school culture might impact the teaching and learning tasks occurring in the various classrooms as well as the knowledge processes targeted by teachers in their task design (useful in contextualizing research question 1). Throughout the study, I had many informal conversations

with the principal. She provided me with insights into how the teachers were designing tasks and the books they were reading as a staff to inform their practice, which was helpful to my conceptualization of this context. Even after the study concluded, I was in regular contact with her and other participants, which was invaluable as I wrote up my dissertation. It is important to note that my conversations after the study with the adult participants were social or more often at a professional level as I worked in the same school district and was in an administrative role (I worked with all the schools in the school district providing advice with regards to ELL programming). I did not have many opportunities to talk about the study with my participants.

As with the student participants, I conducted three semi-structured interviews (beginning, middle, and end) with the classroom teachers, whom I will introduce in Chapter 4. Three main teachers taught this group of students, and I had regular informal conversations with them usually before class or before my departure from the research site. The purpose of the three formal semi-structured interviews was to ensure that I could ask questions with regards to specific learning tasks occurring in the classroom. The teachers most often were interviewed as a group. Although, on one occasion two teachers were able to be interviewed together as a result I interviewed the third teacher alone. As I wanted to gain a deeper understanding about how the teachers designed these tasks, such conversations were critical to my process of meaning-making. The teachers' views were also crucial for a more in-depth understanding of this social phenomenon, a technology-enhanced classroom, and the learning tasks that occurred in this environment. First, as I learned in my data analysis, a teacher plays a central role in designing learning tasks in a classroom. Second, these teachers provided me with insights and perspectives on their students' classroom experiences. The questions in these interviews focused initially on the teachers' beliefs around teaching (e.g., teaching philosophy, literacy beliefs), which were

crucial to understanding the teaching philosophy of both the school and classroom. In the later interviews, I asked additional questions about my participants, their academic progress, and their learning experiences. I also asked for clarification and further information about the instructions given to students and specific projects or tasks. During all of my conversations, I found every teacher willing and keen to share their perspectives. In fact, as I mentioned previously, these teachers saw me as a colleague. I was told by one of the teachers that I was “a member of the team,” a comment indicating to me that I was respected and considered an insider. The interviews mirrored a conversation in a staffroom with me being a part of these conversations, often offering opinions and insights.

While most of the data for this study was gleaned from students’ experiences (e.g., artifacts/student work, student interviews, student literacy documentation) in this technology-enhanced classroom, interviews with teachers and the administrator clarified how tasks were designed, allowing me to gain a deeper understanding of the intended purpose of each task. For that reason, these interviews are incorporated into the data discussion presented in Chapters 5.

**(5) Artifact Collection.** I collected a number of artifacts throughout this study, including digital documentation (e.g., eportfolio items of students’ inquiry projects, student created videos). I also sought to collect non-digital artifacts (e.g., rubrics created by teachers or students, assignment outlines), although the majority of these artifacts were digital: for example, teachers would often email me a digital copy of their rubrics. In this technology-rich environment, though, teachers and most students often favoured digital modes over non-digital ones. The fact that most artifacts were digital indicated that digital technologies were an integral part of everyday learning tasks. When I was not in the classroom, the students would share their work via Google Drive with me. On a regular basis, I would find new projects and work shared with

me. The collection of these artifacts was important as they provided rich insights into the learning experiences occurring in the classroom. I had opportunities to ask questions about the artifacts during interviews with my participants to seek clarification on my participants' meaning-making processes. For example, I asked questions with regards to their eportfolio selections and why they picked certain artifacts. I also asked students how certain artifacts were created and why they chose the modes they did. This clarification allowed me to better understand the knowledge processes (Cope & Kalantzis, 2015) activated by students.

### **3.4 Data Analysis**

The theoretical framework, learning by design (Cope & Kalantzis, 2015) discussed in Chapter 2 informed both the analysis and the data collection process. Drawing and adapting from a number of authors' perspectives on conducting qualitative and case study research (Duff, 2008; Merriam, 1998; Marshall & Rossman, 2011), I conceptualize the analytic procedure as comprising the following steps: 1) organizing the data; 2) generating categories, themes, and patterns; 3) analysis (reducing data/narrowing analysis, Thematic analysis [knowledge processes and themes]); 4) interpretation; 5) writing, reporting, and revising. As with any qualitative research, I continuously and actively engaged in these steps through my data collection process. It is critical to note that although the analytic procedure is described in a linear fashion in this dissertation chapter, the actual process is iterative. Before discussing my data analysis process further, I summarize the data I collected and selected for this dissertation, data aiming to address my two research questions. As noted previously, these are

1. What knowledge processes do learners use in inquiry-based tasks designed by teachers in a grade 6 technology-enhanced classroom?

2. Relative to the knowledge processes used in inquiry-based tasks, in what ways do learners mobilize *the known* (as unique to them) across learning spaces?

I answer these research questions by exploring various illustrative examples of learning tasks used to create awareness for both elementary educators and researchers of the learning experiences in which students engage in school-sanctioned and interstitial (non-sanctioned) learning spaces. The table (Table 3.1) below provides information about the illustrative examples, the various data sources, the modes used, the learning spaces, and finally which research questions are addressed.

**Table 3.1:** *Summary of Focal Participant Data Sources*

<b>Illustrative Example</b>	<b>Data</b>	<b>Modes</b>	<b>School-Sanctioned/ Interstitial</b>	<b>Research Question(s) Addressed</b>
Math Building Project	Interview Data (students and teachers) Project Artifact (PowerPoint)	Digital	-School-Sanctioned	RQs 1, 2 Chapter 5
World War II Effects	Visual Artifact Interview Data (students and teachers)	Digital	-School-Sanctioned -Interstitial	RQs 1, 2 Chapter 5
Math Art	Visual Artifact Interview Data (students and teachers)	Mixed Modes (art piece with math concepts)	-School-Sanctioned	RQs 1, 2 Chapter 5
Silly Putty	Interview data (students and teachers) Digital Artifacts (website, advertisements) Email Exchanges	Mixed Modes (Digital and not-digital)	-School-Sanctioned -Interstitial (YouTube)	RQs 1, 2 Chapter 5
Rap Battles	Interviews (students) Recordings of Rap Battles	Mix-Modes (Digital and Oral)	-Interstitial (back of the classroom, YouTube)	RQs 2 Chapter 5

To gain a better understanding of how the tasks in inquiry projects (e.g., Math Building Project, Silly Putty, World War 2 Effects) were designed, I also analyzed teacher interview data and artifacts (e.g., instructions for assignments) that the teachers provided. I followed up with teachers in informal conversations and interviews about certain assignments. For example, after my field observation of the Silly Putty illustrative example, I asked the teacher who designed this project, Miss Green, who is the Social Studies and Business class teacher (I will provide a more detailed discussion introducing her and my focal participants (6 ELL students out of the 25 students) in the following chapter), to explain the assignment and provide me with more details about her expectations. These discussions often occurred immediately after a class observation or after a discussion with students.

The 5 illustrative examples in this dissertation were selected because they helped to make salient the various knowledge processes/activity types intentionally designed by teachers in this classroom and help me to better understand the students' learning experiences. These illustrative examples also provided insights into how students bridged both lifeworld and school practices in this technology-enhanced classroom.

**(1) Organizing the Data.** Early in my study, I realized the importance of spending time to organize my data (Marshall & Rossman, 2011). As I had 25 student participants, I collected a significant amount of data. During the data collection process, I organized the types of data digitally (e.g., interviews, artifacts) by date and in various folders. I coded data by identifying notations for each interview and set of field notes; this allowed the information to be easily accessible later when I was analyzing or writing up my findings (Merriam, 1998). To keep track of my thoughts and speculations as I engaged in my analysis, I kept a digital researcher journal (Duff, 2008) in addition to my field notes; the journal entries contained my impressions,

questions, decision-making, and other issues arising as I went through the process of analysis. I usually wrote researcher journal entries right after leaving the research site so I would not forget anything, or to capture important thoughts or wonderings during my analytic process. I recorded classroom observations using a journal (sketch notebook format), organized by date and locked in a cabinet. I later digitalized these observations by scanning the contents of the notebooks and creating a Portable Document Format (PDF) which I coded for themes using the software ATLAS.ti. The classroom observations were transcribed to digital format and saved by date in various folders (I adhered to the university ethics rules around storage of data).

Adapting the method that Morita (2002) used in her dissertation study, at the end of my data collection I attempted to organize my data by participants. Each of my participants had their own folder and Word document where I wrote down key findings, characteristics, learning experiences, and perspectives. I also created tables and charts to help better understand/ conceptualize and compare each research participant. These tables helped me to see potential patterns and organize the structure of my dissertation. All the data concerning each participant was reviewed (e.g., monthly documentation of literacy activities, interviews, artifacts, field observation notes, my researcher notes). I reviewed this raw data and the analysis I had done so far to provide a summary of each participant. This process allowed me to establish and determine patterns, similarities, and differences across my data.

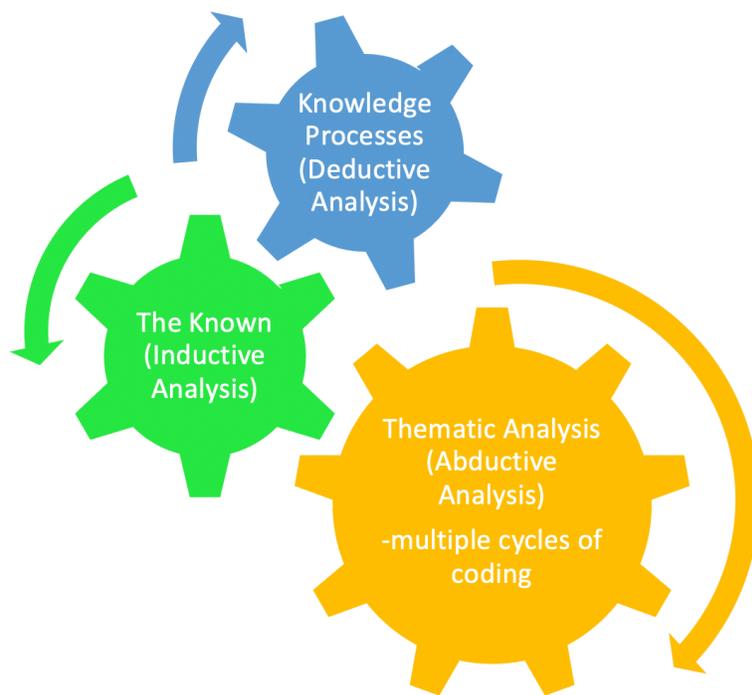
**(2) Generating categories, themes, and patterns.** Returning to my research questions, (see above) the aim of the study reported here is to gain a better understanding of the learning experiences of grade 6 ELLs activated by teachers' inquiry-based task design in a technology-enhanced classroom. I also aimed to extend our understanding of how students mobilized their lifeworld meanings and productive practices, their *known*, into the classroom to mediate formal

learning tasks, specifically those involving digital technologies. Therefore, it was important that I knew my data well and actively engaged with it (Marshall & Rossman, 2011). I conducted a thorough initial review to find commonalities amongst the various data sources (e.g., field notes) and maintained my researcher journal to reflect on new insights or questions I might have. Part of this process also involved an initial coding of my data for common themes and categories specific to my research questions (including coding for knowledge processes [Cope & Kalantzis, 2015] on which I elaborate below). I used ATLAS.ti software, which helped me organize my data and identify and code for patterns. This iterative process helped me to gain a better understanding of my data.

**(3) Analysis (reducing data/narrowing analysis, thematic analysis [knowledge processes and themes]).**

*Reducing data/narrowing analysis.* Using the salient themes generated from the initial coding process, I engaged in a reducing data/narrowing analysis process (Duff, 2008). I reviewed the data to pinpoint sections within interview data and Computer-Mediated Communication (CMC) discussions that reflected these common themes. For example, within the interview data, I noted sections in the audio that needed to be transcribed as they directly linked with one or more of the initial salient themes (see Figure 3.2 for a visual representation of my data analysis process).

**Figure 3.2:** *Data Analysis Process*



**Thematic analysis [knowledge processes and themes].** Both my analysis and interpretation of data can best be described as an abductive approach where there was an iterative bottom up and top down process which encouraged and allowed both a theory-driven analysis but also the opportunities for unexpected findings (Agar, 1996). The abduction method is explained to “[have] some characteristics of both induction and deduction, but it is very important to keep in mind that abduction neither formally...nor informally is any simple ‘mix’ of these, nor can it be reduced to these...” (Alvesson & Sköldbberg, 2018 p. 4). Agar (2010) described abduction as the heart of ethnography and its great strength (p. 289). “The research process, therefore, alternates between (previous) theory and empirical facts (or clues) whereby both are successively reinterpreted in the light of each other” (Alvesson & Sköldbberg, 2018 p. 5). I elaborate on my process below.

Once data reduction had been completed, data (including transcribed interview transcripts, visual and textual artifacts, and student researcher journals) was analyzed using additional thematic analytic techniques (Saldaña, 2016). To address Research Question 1, I used deductive analysis. The units of analysis I used to code data were the “knowledge processes” that are listed in Table 3.2. (Cope & Kalantzis, 2015).

**Table 3.2:** *Knowledge Processes (Cope & Kalantzis, 2015)*

<b>Knowledge Processes</b>	<b>Definition</b>
<i>Experiencing the Known</i>	Incorporating opportunities for students to draw on their previous experiences or the “familiar.”
<i>Experiencing the New</i>	Introducing a learner to a topic that is less familiar. Learning occurs with these activity types when it is scaffolded.
<i>Conceptualizing by Naming</i>	Defining and learning to use abstract and generalized terms. This activity type also includes categorizing similar and differences and labeling a diagram.
<i>Conceptualizing by Theory</i>	Asking a learner to link the concept name into the language of generalization (e.g., concept maps, putting concepts together, drawing a diagram).
<i>Analyzing Functionally</i>	When a learner is reasoning, drawing inferential and deductive conclusions, establishing cause and effect.
<i>Analyzing Critically</i>	When a learner critically considers human interests and intentions- their own and other people’s (e.g., identify the gaps).
<i>Applying Appropriately</i>	When a learner applies knowledge in the “usual” way to see whether it works in a predictable way in a conventional context. (e.g., solving a math problem)
<i>Applying Creatively</i>	Using knowledge you have learned and applying it into another context.

Each illustrative example was coded for the knowledge processes that are listed in Table 3.2. For example, data was coded for *experiencing the known*, when a student used a grandparent story to

complete a social studies assignment. Another example is when I coded the data, *analyzing critically*, when a student provided an explanation about why the news article chosen provided evidence of a particular pillar of democracy.

When addressing Research Question 2, I used inductive analysis, where I coded the data to identify identifiable themes. For example, initially I noticed instances in my data where students searched information on Google; I coded this data as “digital sources.” Also, during this initial coding, when students used the dictionary, for example, I coded this as “non-digital sources.” Later, I analyzed these data and my codes and I found that the initial salient theme was “the high frequency of digital sources over non-digital sources in information searches.” In this example, this initial salient theme was a starting place for my further analysis where I engaged in another cycle of coding. In this additional cycle of coding, I coded data “internet search terms” when a student used “vintage” to search for old paper background on Google. After additional coding cycles, the consideration of this additional coded data, and further analysis, I noted that although digital sources were prevalent in this classroom (an initial salient theme), the *known* included the students’ technological knowledge to apply appropriate internet key search terms to find information. In this way, the codes I identified, using ATLAS.ti and Microsoft Word Tracking, generated in the initial analysis became a starting place for a more detailed analysis, to refine the salient themes and relationships. This thematic analysis helped situate and interpret not only knowledge processes but the *known*. The process of analysis for me included reanalyzing and recategorizing data on a continuous basis. Saldaña describes how a second or (in my case, multiple) cycle of coding requires a researcher to develop a better sense of the thematic, conceptual, and theoretical organization from the array of initial codes. I accomplished this by returning to my theoretical framework (multiliteracies, learning by design, and multimodality)

and my research questions when looking at my initial codes. During this process, I looked at whether or not my research questions were answered, then I reorganized and reconfigured my codes to develop a smaller and more concise list of broader themes. Analytic memos were kept during the entire process; Saldaña described how these memos are “potential sites in which rich analysis may occur” (p. 45). My researcher journal was also a critical part of my data analysis process. As a novice researcher, I found that by noting my wonderings in my researcher journal I was able to reflect further at a later date.

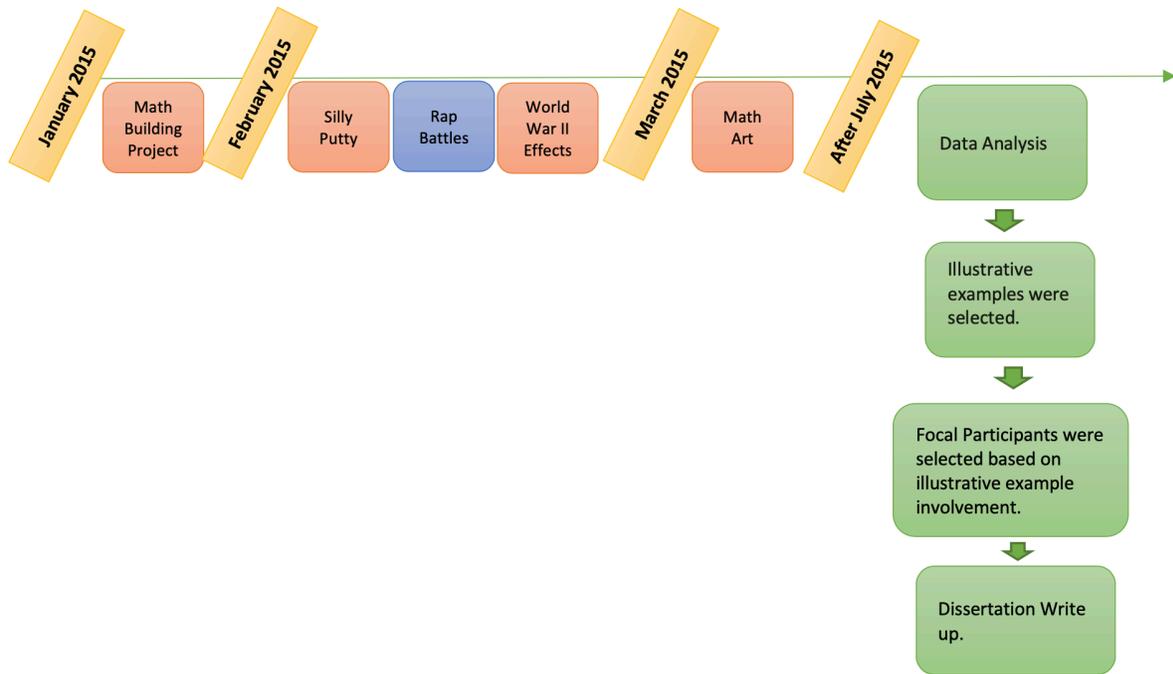
**(4) Interpretation.** I returned to my research questions and the salient themes established throughout my process of analysis. I reflected on whether or not I had sufficient evidence to present my argument and to draw interpretations and conclusions (Duff, 2008).

The following study is a multiple case study of various illustrative examples, which highlights the learning experiences of grade 6 English Language Learners (ELLs) in a technology-enhanced classroom. During this interpretation process, I needed to consider what illustrative examples would be selected for this dissertation. Duff (2008) discusses how in order for case selection to occur a researcher must consider 1) what entity will constitute the case and 2) what phenomenon within the case will be investigated (p. 114). Therefore, after careful consideration as a researcher, I determined the selection of my cases (my illustrative examples) for this dissertation. As I will discuss in later chapters, there were 5 illustrative examples selected for this dissertation (4 of these illustrative examples occur in school-sanctioned learning spaces and 1 illustrative example that occurred in a non-sanctioned (interstitial) learning space). These illustrative examples were selected (as they answered my research questions) and then the focal participants were determined based on their involvement in these illustrative example (see Figure

3.3 for a diagram of the chronology of this study). My focal participants will be discussed in greater detail in the next chapter.

One of the challenges during this process was processing the large amount of data I had collected. For this study, finding illustrative examples that answered my research questions was not an issue, but narrowing down which ones to use was more difficult. Part of my process included examining my salient themes and considering which illustrative examples would help me to better understand the learning experiences in this classroom context. I also reflected on counter examples at this point, since a case study is complete when it displays sufficient evidence and considers alternative perspectives. Therefore, in the final stages of my research analysis, I considered rival explanations or data (outliers). This process also included reconsidering my theoretical frames (multiliteracies and learning by design) and determining if there were any other angles I had missed. Also important to note is that, throughout the entire data analysis process, I revisited and consulted the literature continuously as guidance.

**Figure 3.3:** *Chronology of Study*



**(5) Writing, Reporting, and Revising.** In the final stages, I organized my presentation of data and findings to write the remaining chapters of my dissertation. This process involved choosing representative evidence (Duff, 2008). As I have detailed previously, I kept a researcher journal that included my analytic memos. Throughout the investigation, I reflected on my questions, writing down my insights and noting my decision-making. As Marshall and Rossman (2011) have noted, writing about qualitative data cannot be separated from the analytic process; the words chosen arguably create meaning out of raw data. As a researcher, I reflected on the ethical conduct, usefulness, and soundness of what I included in this dissertation. I also reflexively considered my role as a “researcher” and how I might have shaped events and meanings. In particular, I reflected on how the teachers referred to me as a “member of the

team,” and some of the students also referred to me as their “favourite adult friend.” Such comments indicated to me that I had become a part of this study and therefore potentially had a significant impact on what happened in this technology-enhanced classroom context. In the next section, I note my positionality within this research context and also discuss the relationships I had with my participants.

**Figure 3.4:** *Data Analysis Procedure*



### 3.5 Researcher Positionality

As a Chinese Canadian woman, I recognized the role I played in this study. As I discussed briefly in Chapter 1, my experiences in both interstitial (non-sanctioned) and school-sanctioned learning spaces helped to shape this study (Wong, 2019). My experiences have impacted the research questions I asked, as well as how I analyzed the data and ultimately wrote up the findings. I was born in Canada, and although I have not had the experiences of moving to a new country, I come from a family of immigrants. My great-grandfather paid the head-tax in order to come to Canada, leaving his wife and children in China so my family would have a better future. My father later came to Canada as a five-year-old boy. He recalls stepping off the plane when arriving in Canada and falling on a patch of ice; this was after spending his first years of life in rural southern China where there was no snow. His first three years in Canada consisted of not understanding English and figuring out a new world and social context with which he was unfamiliar. Alternatively, my mother came alone as a high school student to Ontario, leaving her family and the life she knew behind in Hong Kong. She faced the challenges that new immigrants often faced without her family and an immediate support system. Even now, she reflects on how she feels her English is not good enough although she graduated from a Canadian university.

These memories and lived histories are a part of my collective memories, my *known*, and shape the researcher that I am. Like my research participants, I come with a history of lived experiences. Due to my own family experiences and experiences as an inner-city schoolteacher, I recognize and understand the challenges that immigrant children might face. I am also aware that I have biases around how ELL students should be taught and how technology should be used in the classroom. My own experiences as a teacher helped to shape a strong philosophy in

implementing inquiry-based learning in the classroom. As a teacher, I was a facilitator of learning, and my classes explored the world through the wonders and questions that my students generated. I provided the provocations, the scaffolds, and the frontloading so my students could engage in their own personal explorations of the world. How I taught my students has always been intentional, and as an educator I believed it was important to know and understand why I did something.

My curiosity about whether this approach was the case in other schools as well became a motivation for undertaking this study. I entered into a research site located in a school district I knew well. As an insider in this school district, I was privy to information that other researchers may not have access to (e.g., conversations with colleagues, access to the employee website). However, I was careful not to use information for which I had not gained ethical approval. At the time of this inquiry, I was still an employee of this school district and officially on leave. As I was in an administrative position before taking a leave to complete my PhD, I was aware of the potential power dynamics that could occur if I were conducting this study in a school where I had worked previously. As I was still on leave, in this research context I entered as a researcher and not as a school board employee. I also specifically chose this site as I had not worked with the majority of the teachers beforehand. Also, the location and dynamics were new for me as I had never worked at this school.

As an experienced teacher, I was aware of the potential impact I had in the classroom. It was not my role to critique the practices of the teacher or suggest improvements. It was also not my role to be teaching the class, although I helped out periodically. I did not always play an active role in the classroom since I was engaged in field observations or focusing on my participants. I clarified my role to my participants and communicated what I might be doing in

the classroom. Although I was happy to provide technology support, I was careful to maintain a professional distance.

Initially, I attempted to build a rapport with my participants. I was aware of a possible power dynamic as I am older than my participants and coming from a university, so it was crucial that my participants felt comfortable around me. I asked that my participants call me “Melanie” rather than “Miss Wong.” I hoped that using my first name rather than a more formal title would help with the potential power dynamics as well as establish that I was not a teacher in this space. Perhaps a testimony to how successful this researcher/participant relationship was for some of my participants is that one of my participants called me “her favourite adult friend.” In terms of the students’ understanding of my role, I let them know that I was there to learn more about what they did in their classroom and their meaning-making processes. As mentioned previously, I used age-appropriate terms to explain what I was doing: e.g., I am engaging in an “inquiry,” the normal terminology used in the classroom when referring to doing research; I have questions I want to be answered and am hoping they will be able to help me to answer these questions.

Since I was considered a member of the team by the teachers and I had a relationship with the staff, I was given “free” access to all parts of the building. It will be noted in my illustrative examples that my interviews were conducted in various locations in the school, such as rooms to which only staff had access. I often asked in advance if I could use an empty room, and the staff at Cypress Hills accommodated my requests. For example, I would mention to the principal I needed a space to conduct focus group interviews, and she would book the conference room for this purpose. My connections with the school district and also the relationships I cultivated with the staff, especially the principal (who supported my study from the moment I

asked to use her school as a research site), helped make the collection of data very easy and seamless.

As I mentioned previously, I kept a researcher journal, which allowed me to be reflexive and recognize the many biases I might have as I went through the process of analyzing the data. Duff and Early (1996) assert that more reflexivity about the research process should be a part of a research report. In the same publication, Duff and Early discuss how important it is to protect participants and individuals who have voices that are easily identifiable. Therefore, I was cognizant that when I interviewed the classroom teacher and the administrator, I needed to be protective of these individuals since what they might tell me during an interview could potentially have ramifications for their jobs. When discussing my interview theory, I noted the co-construction that occurs between the interviewer and the interviewee and that any of the interviewer's contributions are subject to the same type of analytic focus as the interviewee's (Roulston, 2010). I am mindful that the researcher is also being researched.

### **3.6 An Inquiry of Trust**

A common area of discussion in the literature I have reviewed is a focus on the quality and credibility of a study (e.g., Duff, 2008; Merriam, 1998; Marshall & Rossman, 2011; Yin, 2009). Yin (2009) posits that by using several different sources of information, a case study's findings will be more convincing and accurate. Similarly, Stake (1995) discusses the sense that a researcher is confirming meaning and looking for additional interpretations. This occurs through triangulation; Duff (2008) speaks about triangulation or "crystallization" (a multifaceted metaphor) and how this increases internal validity. Thus, rather than seeking one answer or "truth," I sought to develop a better understanding of the learning experiences that occurred in this classroom, the modes that students used to express meaning, and a deeper understanding of

how the *known* mobilized across learning spaces. My inquiry involved multiple sources of data (e.g., interviews, artifacts, researcher journals), and I would argue this multifaceted approach is one of the strengths of this inquiry. By drawing on a variety of data sources to conceptualize my case study research, I was engaging in “crystallization” and therefore providing a deeper understanding of this unique phenomenon. Dyson and Genshi (2005) elaborate:

. . . if a study gives readers a sense of “being there,” of having a vicarious experience in the studied site, then readers may generalize from that experience in private, personal ways, modifying, extending, or adding to their generalized understanding of how the world works. (p. 115)

They refer specifically to Stake’s concept of the “naturalistic generalization,” a concept I question. It is unclear whether or not we can truly validate something like a naturalistic generalization because of how subjective it is; such a personal generalization is very much dependent on an individual and his/her own experiences. However, Stake (1995) asserts that it is the researcher’s responsibility to assist readers in drawing excellent understandings. A researcher needs to present readers with a comprehensive and in-depth discussion of the findings.

Throughout my dissertation, I invite readers to experience some of what I did as a researcher and ethnographer. I also hope readers will extend their understandings of technology-enhanced environments and the learning experiences occurring as a result of teachers’ intentional and purposeful task design.

By providing multiple sources of data and a comprehensive analysis of this data, case studies like this aim to provide readers as accurately as possible with a representation and understanding of the experiences and meanings people have constructed (Duff, 2006). One of the strengths of this inquiry is the prolonged engagement within the research site, which allowed me

to better understand the tasks that were designed and rationales for them. The next chapter introduces the research site (Cypress Hills School), the school vision, the grade 6 technology-enhanced classroom, and the participants, all providing the necessary background information for the findings presented in Chapter 5.

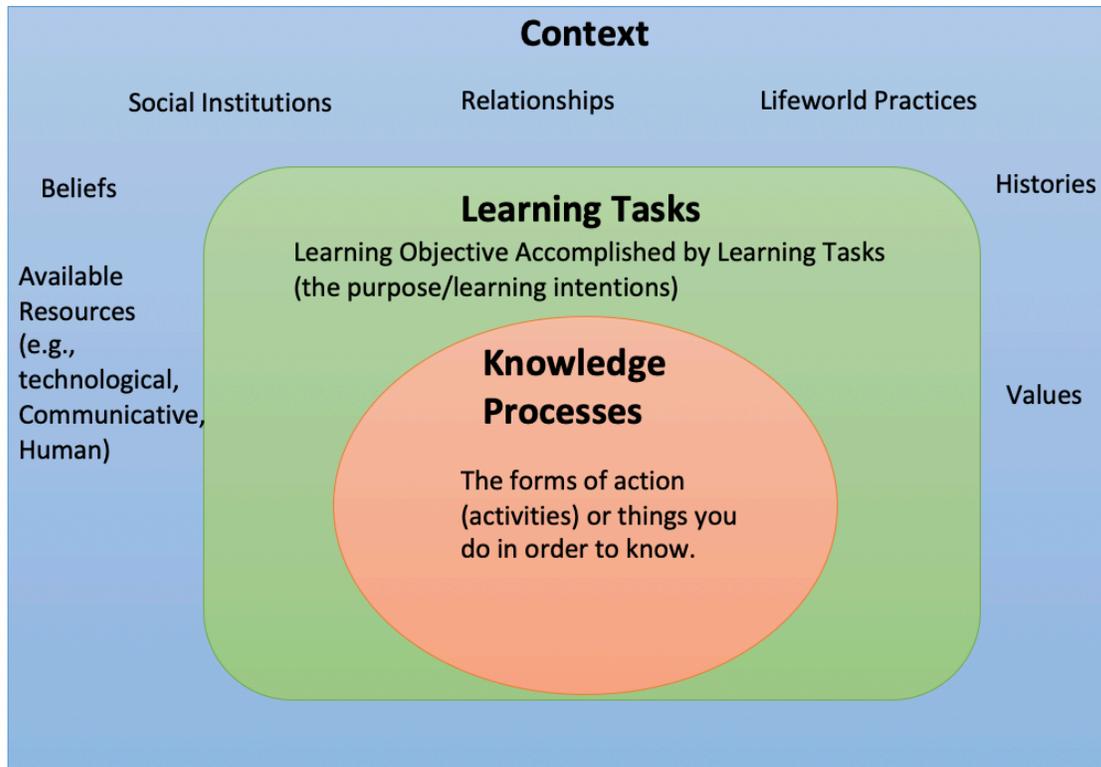
## **Chapter 4: Introducing Research Context and Focal Participants**

### **4.1 Introducing the Research Site**

The purpose of this dissertation is to gain a better understanding of the learning experiences of Grade 6 ELL students in a technology-enhanced classroom by exploring the knowledge processes (Cope & Kalantzis, 2015) that the students activated in their inquiry-based tasks which provides a lens into what the teachers did to encourage these learning experiences. This study also strives to deepen our understanding of how students mobilize their *known* across and between learning spaces, potentially bridging lifeworld practices and school-sanctioned experiences. The chapter begins with the necessary background information to contextualize the teaching and learning in this technology-enhanced classroom. It also begins the discussion of some of the learning experiences that occurred in this classroom.

Figure 4.1 shows the pedagogy and learning tasks within this classroom context:

**Figure 4.1:** *Contextualizing this Technology-Enhanced Classroom*



This chapter is organized in the following manner: 1) a detailed examination of the district and school contexts, 2) a report of the principal’s vision, 3) a glimpse into a day in this grade 6 technology-enhanced classroom, including introducing the 25 student research participants and the 3 teachers, and 4) a comprehensive description of each of the six focal participants’ backgrounds and interests (selected from the 25 student research participants). These details provide not only a better contextualization of my focal participants but also a deeper understanding of the classroom context (see Figure 4.1), all of which furthers our understanding of the learning experiences in this classroom.

## 4.2 The School District

In this section, I discuss the provincial expectations and school district vision (see context in Figure 4.1). As I elaborate below, this school district vision informed all decisions made with regard to student learning, including how human resources in the school were allocated and organized to better support student learning and how teachers designed tasks on a daily basis.

Cypress Hills School (pseudonym) is part of a school district in a Western Canadian city. As mentioned previously, Canada at the time of this study was seeing an influx in immigration (see Statistics Canada, 2018). In the school district where this study is situated, this immigration increase resulted in a growing English Language Learner (ELL) population: over 25% of the K-12 students were identified by the school as ELL. Cypress Hills School had one of the highest populations of ELLs in the school district with over 67% of students identified as ELL.

Following a series of influential provincial policy and vision statements, the school district had adopted the overall vision of “Personalization of Learning” (see Ontario Ministry of Education, 2013b; Sizer, 1999). Personalization of learning focused on each individual learner’s needs. To personalize the learning for a student meant designing learning tasks that allowed students to have multiple entry points to engage in the learning process. The concept of personalization of learning guided how teachers planned, implemented these plans, and programmed instruction for their various students. Teachers learned these strategies through extensive district-wide professional development. New teachers were hired based on whether their teaching philosophies aligned with that of the provincial government and school district, and every member on staff at this school district was familiar with this vision.

One of the ways teachers in this school district personalized learning for their students was by using inquiry-based learning pedagogic approaches such as those described by the

Galileo Network (see Clifford & Frieson, 1993; Clifford & Marinucci, 2008). Another initiative mandated by the school district consisted of professional learning communities (DeFour et al, 2008) in which all teaching staff were required to participate. The focus of these professional dialogues was on furthering student learning, again linking to the notion of personalization where the focus is on the learner. Using a variety of conversation protocols and lenses, teachers engaged in discussions which looked at student work, determined next steps in instruction, and gave opportunities to adjust their teaching practice based on the data presented. A key role of school leaders in this school district was to provide opportunities to facilitate this professional development and conversation; as I discuss in a later section in this chapter, the principal played a critical role in establishing a school vision that guided these professional learning community discussions.

The school district and province invested a significant amount of money in a variety of technologies (digital and not) to support student learning. For example, in previous years money had been given to each school to purchase SMART boards in classrooms as part of a system initiative. However, both digital and non-digital tools played a significant role in how students engaged in meaning construction. This school district used a variety of digital technologies, but what was available in each school depended on the decisions made by principals, students' needs, and the school vision. Most schools had SMART boards, computers (Mac or PC), and a variety of handheld devices (e.g., iPads or tablets); however, how the technologies were distributed and what was purchased differed from school to school. It was an intentional decision by the principal at Cypress Hills School not to have a SMART board in each classroom, although all teachers had some sort of projector, because she anticipated that not every teacher would use this technology the way it was intended. However, there was a SMART board in each of the

three classrooms where the students attended their core classes (math, science, social studies and language arts). As I describe below, using a variety of digital technologies was part of the daily practices in these classes: from taking attendance on computers to sharing information via Google drive (which both teachers and students did regularly).

### **4.3 A Technology-Enhanced School**

Cypress Hills was an ethnically and linguistically diverse school. Many of the students were new immigrants to the country or first-generation Canadians from countries where English is not an official language. On weekday mornings at 8:10 a.m., a long line of cars waited at the mouth of the staff parking lot as parents dropped off their children. Both outside and inside the jet-black front doors of the school, students huddled around waiting for the bell to signal the beginning of another school day. Inside the school, students clustered in every available space in the compact foyer. Some sat on the floor, their backpacks sprawled beside them; others stood, engaged in animated discussion with their peers. The voices and laughter vibrated throughout the tight space. On first observation, it appeared that the students were just socializing. However, it was in these informal spaces that students engaged in a variety of learning experiences.

The grade 6 students converged regularly in three alternating learning spaces depending on a rotating two-day schedule; two rooms were on the main floor of the school and the third room was on the second floor. The students' half-size lockers (red or grey) were on the second floor at the far end of the hallway, close to their homeroom teacher's classroom. In the mornings, once the bell rang, the students congregated at their lockers: socializing with their peers, putting away their jackets and backpacks, and grabbing the books and materials—including electronic devices—they would need for their morning classes. Teachers stood in the hallway supervising the activity and making sure there was general order. They interacted amongst themselves or

with the youth. The youth slowly made their way into their morning classes, moving seamlessly between various learning spaces: both classrooms and interstitial (non-sanctioned) learning spaces. Commonly some students were texting on their phones and others talking to their peers.

In the mornings, students always congregated in one classroom as an entire class. As mentioned above, which classroom they met in depended on a two-day rotating schedule. Over time, I learned that this schedule also changed and could be renegotiated amongst the different teachers. For example, perhaps all the grade 6 students were working on a similar project in science. Instead of following the usual schedule in the mornings, all the grade 6 classes might meet in the learning commons rather than their usual designated learning space. What was consistent, as I learned through my observations, was that students met as a class every morning, and whoever the teacher was in that classroom space would take the attendance. Each room had large windows, allowing natural light to flood into the physical space. The students sat at tables and in groups in all of their classrooms; this arrangement reflected an intentional decision by the principal when furniture was purchased for the school since sitting at tables opened more opportunities for collaboration and cooperative learning. Before school-wide announcements at approximately 8:30 a.m., teachers took attendance on the computer.

Technology was part of the social fabric of this school. According to the Cypress Hills School website, the expectations for staff were to

*“...possess extensive knowledge regarding technology and its possibilities for enhancing learning within a rich technological environment”* (Cypress Hills School, 2014).

There were SMART boards at the front of each classroom in which the grade 6 students congregated. Students had access to both school-owned devices and their own personal devices (e.g., iPads, laptops). School-owned mobile devices were stored in carts; every time students

needed an iPad or laptop, the teacher used a web-based sign-out system to distribute the devices. This sign-out system noted the computer/iPad workstation number and the student's unique student identification number. The fact that the web-based sign-out system was developed/designed by a teacher in the school district indicates the extent to which these digital devices were integrated into this school's daily lessons: whether by the teachers for instructional purposes or by the students to complete class work. Students also had access to a variety of Web 2.0 tools including Google Apps (which they could access using their own personal password and school board-issued Google email accounts) and Desire 2 Learn or Brightspace (learning management systems).

This brief discussion of the Cypress Hills School physical context (see Figure 4.1) highlights how technology played an integral role in the classroom routines. While later in this chapter and in Chapter 5 I elaborate on the social context of Cypress Hills, in the next section I explore the school vision and significance of this vision/philosophy for the learning in the various learning spaces of this school.

#### **4.4 A School Vision**

To answer my research questions, it is important to understand the school vision as this provides greater insight into the context of the student learning experiences (see Figure 4.1). The school vision guiding the work at Cypress Hills School was more than a vision, but rather a philosophy and a core belief held by teachers in the building about how students should learn and what they felt was important when it came to student learning. Therefore, it is suggested that the school vision played a critical role in why teachers designed the tasks that they did and why certain knowledge processes/activity types were targeted more often than others.

In an interview with the school administrator (Principal Ispirazione) in January, we discussed this vision in detail. The interview took place in the principal's office. Before this discussion, I had had several informal conversations with the principal, including an initial discussion with regards to this study. These previous informal conversations had focused on the principal's beliefs around education and how students learned. Principal Ispirazione was passionate about education: our conversations covered a wide range of topics, from our personal teaching philosophies, to the school district initiatives, to personal matters. We also discussed the latest research and how this might be implemented in a classroom context. She was fascinated with the insights I had gained during my academic journey and often asked me questions about what I had done at the university with pre-service teachers. She also offered me ideas and suggestions for reading. I found our conversations candid and honest; as with the conversations I had with the teachers in the study, I was seen as a colleague. My relationship with the principal helped me to establish relationships quickly with her staff since she was well respected. What I knew from my years in the K-12 profession was the integral role of a principal and how, if you had a relationship with the principal, it helped with every aspect of your job. This was also true for me as a researcher in that my relationship with the principal helped me gain access to my research site.

School administrators in this school district were expected to be able to articulate and lead their staff with a clear school vision. School visions were created by the principal in consultation with their staff but were clearly linked to the overall philosophy of the school district (personalization of learning). A principal's role was therefore to be an instructional leader, which meant he/she was expected to guide, mentor, and inspire his/her staff toward better student learning. As well, since teaching in this school district was data driven with the intent to

incorporate research into practice, part of the principal's job was to analyze, discuss, and assess school student data to determine yearly school-wide goals. The data and goals were regularly revisited and revised/changed according to the students' needs.

During our conversation about the school's vision, Principal Ispirazione discussed several themes that guided the work at Cypress Hills School. These themes provided insights into, and deepened my understanding of, the learning experiences in this technology-enhanced classroom. In particular, I gained a better understanding about why pedagogical moves were implemented by the teachers and why certain knowledge processes were activated by students (research question one). Later in this dissertation, I elaborate further on this vision and how the core beliefs held by the staff at this school encouraged students to activate certain knowledge processes. I also illustrate how the principal's vision promoted and supported students to tap into their *known*, bridging lifeworld and school experiences. At Cypress Hills school, teachers were encouraged to be purposeful and reflective when designing learning experiences for their students; in effect, teachers were designers (Cope & Kalantzis, 2015; New London Group, 2000; Rose & Meyer, 2002).

When asked to describe her school vision, Principal Ispirazione explained, “. . . school is for the students to come to an environment that accepts them for who they are.” She further explained how the focus of the staff was to create an environment that allowed students to engage in meaningful, rich, and rigorous tasks: themes that guided the teaching work in this school context. Her goal was to create a setting where academics were as important as the social reasons for being there. Encouraging students to make connections was a guiding theme at Cypress Hills school; the staff believed that making the disciplines come alive by creating connections between the world and the classroom was critical (I also discuss later the ways in

which connections went beyond the walls of the classroom). Teachers attempted to provide students with engaging learning experiences applied to a specific context by using knowledge processes such as *applying creatively or applying appropriately*. They strived to connect curricular outcomes and real-life application. At Cypress Hills school, students were encouraged to be active participants in their learning. For the Math Building Project I discuss in Chapter 5, teachers invited students' contributions to the design of learning opportunities. Such collaboration was common in this classroom context.

When asked about the school district's vision, Principal Ispirazione elaborated on her own beliefs about the concept of personalization of learning:

I'll just mention that the strategy of the [school board name] is for the personalization of learning and so we are responsible for creating those opportunities because I believe that everybody personalizes learning all the time so it's not for us to personalize learning for them but to provide those opportunities that are compelling and engaging so the students can see themselves in those experiences . . . I think it relies on the teachers' creativity and demands creativity from teachers rather than relying on the textbook obviously we want the curricular experiences to be fulfilling and substantial and because we believe in our students we have to go beyond the program of studies. The program of studies is our guide as it is for everyone but it is intended to be interpreted in a way that brings vitality to the work and marries the lived and mandated curriculum.

Principal Ispirazione made it clear that at her school, teachers were expected to be creative when designing their tasks, to go beyond the curriculum. As I explore further in this study, the theme of a teacher as a designer (Cope & Kalantzis, 2015; New London Group, 2000) is prevalent in this technology-rich school: the teachers make intentional decisions on how they designed

learning tasks in this school-sanctioned learning space by seeking to activate certain knowledge processes/activity types.

Further in our conversation, Principal Ispirazione elaborated that at Cypress Hills, textbooks did not guide the learning in the classroom. As I noted later during my field observations, multiple resources were available, including a variety of books and digital texts. In contrast to more traditional approaches such as didactic pedagogy, (e.g., worksheets) for learning, textbooks did not guide the learning; rather, students were provided with different resources (print or not) which gave students a variety of perspectives, not just the views of one textbook writer. As I discuss later in this dissertation, the internet played a significant role as one of the resources students used to access information.

The teachers were selected and had also chosen to work at this school because their core beliefs about learning aligned with the vision that Principal Ispirazione had cultivated at her school. I show later in this dissertation that at Cypress Hills school, the school vision played a critical role in shaping how and why these learning experiences occurred.

#### **4.5 Within the Walls of a Technology-Enhanced Classroom**

Students in this environment were often seen texting on their digital devices, researching information on the internet, and using other digital technologies. They also used various modes of communication, such as drawing their understandings and using emoticons to text a friend. The following ethnographic data provides a better understanding of the daily patterns and routines I observed in this school-sanctioned learning space: for example, what time the teachers took attendance in the morning, when students began to clean up before a class change, where they sat in the classroom. These patterns and routines helped me to understand this classroom context, in particular the beliefs, practices, and the *known*.

I first want to briefly define what I term school-sanctioned learning spaces versus interstitial learning spaces (Wong, 2019). I believe this notion of learning spaces is significant in a technology-enhanced classroom where students can potentially move ideas and practices fluidly between and across learning spaces. This movement is largely due to the affordances of digital technologies and also, in this context, the knowledge processes that teachers seek to activate in their task design. With this in mind, I define school-sanctioned learning spaces as those that are institutionally bound. These spaces are where one would conventionally see “school-based activities” occurring, such as completing a math worksheet or creating a PowerPoint presentation to show one’s understanding of the Charter of Rights and Freedoms. These activities are not necessarily traditional pencil and paper activities but have evolved due to the affordances of technology (digital and not). I define interstitial learning spaces as informal, including hallways, the back of the classroom, and out-of-school spaces that are not necessarily institutionally bound. What I learned early in my study was that in this classroom, what students did in school-sanctioned learning spaces differed from what they did in interstitial learning spaces (in Chapter 5, I discuss this in more detail with an illustrative example, Rap Battles). In their researcher journals, students described how their engagement in interstitial learning spaces, such as watching vlogs on YouTube, was not the same as what occurred in the classroom: for example, creating a drawing to represent their understanding of a math concept.

#### **4.5.1 Introducing the Teachers**

The students were taught by a number of teachers, but in particular I focus on their three core-subject teachers: Frankie (homeroom, science and language arts teacher), Miss Green (social studies teacher), and Enya Turnbull (math teacher) (they chose their pseudonyms). Miss Green’s classroom was the smaller of the three spaces the students regularly met in. Frankie’s

classroom was located on the second floor. The layout of this room mirrored a science lab, with stools and plenty of counter and cabinet space. The third physical space where the students met was Enya Turnbull's room. Her room was directly across the hallway from Miss Green's classroom and was similar in layout to hers. Each of the three teachers had their own homeroom, and the grade 6 students moved among these three rooms for various classes.

In order to better conceptualize and understand this technology-enhanced classroom, I kept in regular contact with these teachers during the study and had many opportunities to converse with them regularly, both in person and via technology (e.g., email). Since the teachers were welcoming and always helpful, these conversations (both informal and formal) helped me to gain a deeper understanding of the learning tasks occurring in the classroom and the students in this classroom. I learned that these teachers were reflective, dedicated, caring, and hardworking individuals who wanted their students to achieve and do well. I also quickly became friends with them. They were not just research participants. Establishing this relationship helped significantly when organizing my days for observations or if I needed clarification on what I had observed. The teachers also emailed me regularly to let me know if there were special events such as a learning evening or field trips.

In one of my early conversations with these teachers, I asked them to describe their teaching philosophies. What I have learned from my experiences as a K-12 educator is that a teacher's teaching philosophy provides insights into what happens in a classroom. From the start of their career in a Bachelor of Education program, to their everyday lives in a school district, teachers are asked to reflect on what they believe and why. These teaching philosophies provide the underlining motivations for why tasks were designed the way they are and also what happens in the school-sanctioned learning spaces of this classroom. Also, here I want to briefly note that

although these teachers were not familiar with the learning by design framework (Cope & Kalantzis, 2015) and it was not a part of their teaching philosophies (discussed below), these teachers were mindful and intentional with the types of knowledge practices, actions and ways of knowing (e.g., drawing from their disciplinary expertise and the grade level subject specific curricular competences) that they wanted their students to practice in their learning although they did not use this exact framework or term of reference.

Earlier in the chapter, I described how Principal Ispirazione highlighted four key themes during her discussion of the school vision. These four themes were related to the intention that student learning experiences were *meaningful, rich, rigorous*, and made *connections* across disciplines and to the real world. It is suggested that these four themes guided the learning experiences that occurred at Cypress Hills school (see Figure 4.1) and, as I elaborate below, were also complementary to the three teachers' teaching philosophies.

During an initial interview which included all three core subject teachers, Enya Turnbull indicated she had been teaching for seven years. She also described how her own past educational experiences had been traditional in nature. She referred "to the need for students to struggle and figure things out on their own." It was through that struggle where she felt learning happened. Miss Green indicated she had been teaching for six years. In her view, "...there needs to a balance between students figuring things out for themselves which is obviously really important also providing them with the proper tools to let them do it...where some students will need a challenge where other students will need to be guided in certain ways and that is okay." In other words, she felt that there needed to be explicit language teaching for some students. Frankie's teaching philosophy was that every student could learn. She believed that "every single child also has something unique to bring and it is important for teachers to tap into this." All of

the teachers whom I interviewed and spoke with shared common beliefs with regards to learning and how students should be taught. Although as noted in my discussion there were some small differences. However, in my analysis of these interviews, I noted that these shared teaching philosophies complemented the school's vision.

During my discussions with the teachers, the notion of inquiry-based learning became a salient theme; the teachers often focused on providing the students with a provocation, problem, or essential question to explore (see Clifford & Frieson, 1993; Clifford & Marinucci, 2008; Coiro et al., 2016). The teachers also designed and co-designed learning experiences that allowed students to explore their own student-generated questions. For example, in Miss Green's class, students explored by-laws earlier in that school year. The assignment consisted of students creating their own by-laws, and many created by-laws that had personal meaning. For example, chocolatecherrypants and Lsparkle (pseudonyms are used for all students and the profiles of the 6 focal participants are given below) created a Kidnapping By-law. In their assignment, they indicated that many children got kidnapped, and they wanted to address this by creating a by-law. In this project, students explored an issue and attempted to create and find a solution—a by-law to address the issue. That activity exemplifies how the students activated the knowledge processes of *experiencing the new*, *applying creatively*, and *analyzing critically*.

The teachers also designed learning opportunities that encouraged students to tap into their background knowledge and interests— activating the knowledge process of *experiencing the known*. In Frankie's language arts class, the students looked at song lyrics. The students were asked to find a song and identify literary devices such as alliteration, metaphors, and similes, required in the curriculum for Language Arts (see Alberta Education, 2000). One student, Anabel, was thrilled with this assignment as she loved music; in her researcher journal, all she

wrote about was music. Many of the students also expressed an interest in popular music. Recognizing a general interest in music, Frankie designed a task that would be interesting for her students but also linked to curricular outcomes like using and applying literary devices. In doing so, she targeted the knowledge processes of *experiencing the known* and *conceptualizing by name*. She also encouraged students to use multiples modes to represent their meaning-making: modes that included technology.

#### **4.5.2 Introducing the Grade 6 Class**

This section briefly introduces the students in this classroom, providing a glimpse into some of the learning experiences (both informal and formal) I observed in this classroom. Not every student will be mentioned, nor is it my intent to include all. Out of 25 student participants, I selected six focal participants for this dissertation, which I will discuss further below. These six focal participants were all ELL. Below excerpted from my field notes, researcher journal, and interviews, this data provides the reader with a better understanding of some of the learning experiences that occurred in this classroom, an understanding of the students, and an introduction to this technology-enhanced classroom.

It was January 26<sup>th</sup>, and I was observing Miss Green's social studies class. Her classroom was on the first floor at the far end of the hallway. Similar to the other classrooms in this school, the windows were large and allowed for the light to flood into the large space. The 26 students sat at tables rather than desks with the SMART board located at the front of the room. As on many of the days I had observed to date, the students were sprawled in various spaces in the classroom. Some groups were sitting on the floor, others sitting at the tables. There were iPads, laptops, and personal handheld devices distributed amongst the youth. Miss Green was circulating around the room, facilitating conversations and helping students with their questions.

In the short time since entering this research site, I had become familiar with the routines and personalities that made up this classroom. The members of this classroom were a social group; most days, the room was filled with laughter and discussion. The majority of students in the classroom took academics seriously and worked hard on any task they were given. However, as I explore later in this dissertation, there were still opportunities for play. Of the participants I recruited for the study, 12 were boys (Bolt, Woverine, Marty, cheezychan, cheeseman, weareanonymous, mint marker, skippy, Fireboy, Player, Mango, Steve) and 13 were girls (rainbow unicorn, Anabel, Samy, BabyCupcake101, chocolatecherrypants, Eddy Teddy, PeaceMaker, Panda, duck, Lsparkles, Crystal, Chocolate chip cookie, Starfire). Only one student in the class did not assent/consent to the study.

As mentioned previously, the majority of the students in this classroom had been identified as English Language Learners (ELLs); only two out of the 26 students were not ELL. Students whom teachers identified as ELL had an intermediate to advanced language proficiency level based on the classroom-based language assessments completed and the Alberta English as a Second Language Benchmark Assessments (Alberta Education, 2011b). Many of the students were Canadian born and were not proficient in reading and writing in their first language. There were no beginner level ELL students in this classroom.

I found early in my data collection that girls were more willing than boys to share their learning experiences. Many of the girls emailed me regularly about their social lives and schoolwork. They were keen to give me a glimpse into their many learning experiences in the classroom and in interstitial learning spaces, such as out-of-school, back of the classroom, or the hallway. For example, Lsparkle (a non-focal student), an avid Snapchatter and social media user, as previously mentioned regularly sent me emails—sharing pictures of what she was eating, her

drawings, and pictures of her family and friends. During my data collection period, she took a family trip to attend a wedding. The entire time she was away she sent me daily emails, including pictures of the wedding venue and selfies with family members. Similarly, I received emails from other girls in the classroom, especially on the days when I was not at the research site. Samy, Babycupcake101, Eddy Teddy, and rainbow unicorn (all focal participants, refer to Table 4.1) were in regular contact (almost daily and often hourly) with me via email. On several occasions during the study when I was away (e.g., in Toronto for a conference or Hong Kong at another conference), the girls were curious to hear about my travels and learn what I was doing. I sent them pictures of what I saw, and they would reciprocate by sharing what they were doing or pictures of their work at school. I learned about their after-school activities, friendship groups, and families.

The boys were not as forthcoming about sharing their lives. Some of the boys sent me emails: in particular mint marker (focal participant, refer to Table 4.1), who enjoyed sharing his favourite music with me. What I learned with regard to interacting with the boys in this technology-enhanced classroom was that when explicitly asked, they did offer their insights. However, they were less keen to initiate contact with me outside of the classroom. Interestingly, one student, cheesychan, (a non-focal student) did not email often but regularly shared his work with me via Google Drive without my direct request. Although I was not always in the classroom, the students kept me updated on what was occurring there: whether it was via email or recapping events when I came for my next observation. I was a part of their social group: included in group emails (between groups of students) and invited to “hang out” with them at lunch.

On this January morning, the youth were working on their Pillars of Democracy project. Looking at the various digital screens across this school-sanctioned learning space, I would notice how many of the students were flipping between different browser windows and websites. It was not uncommon to see students listening to music on their iPods/iPhones or texting a friend on their phones as they worked. That day I was sitting with Panda (non-focal student); we were having a discussion about the word “relations.” She explained how she did not understand the word. I asked a few probing questions, referring specifically to the images on the screen of President Obama and the India President Pranab Mukherjee from an online news article. Through our discussion, we made connections to the word “relationship” and then finally looked at the facial expression of these two leaders. We noted that they were smiling, and Panda decided she was going to draw a picture to represent her new understandings. This picture would have flags from both countries and hands shaking to represent the new friendship that was discussed in the article. In this instance, I learned about the modes that students used in this classroom, which included visual modes such as drawing a picture to show their understanding and exploring websites to find information.

Weareanonymous (non-focal participant) was listening to his music using his iPod as he worked. He explained to me how he enjoyed playing his Xbox with his peers. They connected their Xboxes to the wireless network in their homes and used voice chat to communicate with each other. He elaborated on how it was hard to talk and navigate movements in the video game. Weareanonymous was also texting messages to Player (non-focal participant) on his iPod using iMessage while talking to me. Player was sitting across the room working with another peer. Embodying Abrams & Russo’s (2015) concept of layering literacies, weareanonymous was combining different practices—working on his assignment, engaging in a conversation with me,

and texting with his friend. I also gained an understanding about what students in this technology-enhanced classroom did in the interstitial learning spaces: in this instance, weareanonymous played on his Xbox with his peers. These youth connected and converged in this interstitial learning space and video-gamed together. This interstitial activity differed significantly from what was happening in the classroom where students were researching and trying to learn more about the Pillars of Democracy.

In this classroom, one of the daily literacy practices included using the internet (in many instances Google) to find information. Students regularly used their digital devices to access information. On the other side of the room, cheesychan (non-focal participant) and Babycupcake101 (focal participant, refer to Table 4.1) were experiencing difficulties articulating the correct search terms to type into Google to find what they are seeking. Babycupcake101 typed the word “representation,” getting a very broad range of results that had little or no relevance to the Pillars of Democracy. Miss Green intervened and attempted to provide them with a lesson on how to narrow their Google search.

In this technology-enhanced classroom, a range of learning experiences occurred at every given moment. As I mentioned earlier, the school did not require textbooks, but since students had a choice to use a broad range of texts, the meaning-making in this classroom included a mixture of both digital and non-digital modes. For example, I noticed during my initial observations in early January that the students were using Minecraft, creating videos (using iMovie), and using non-digital means (e.g., pencil, markers, and paper) to express their meaning-making. Enya Turnbull taught Art as an option to the students, so she often incorporated opportunities in her Math class to allow students to creatively express themselves (I discuss this further with Babycupcake101’s (focal participant, refer to Table 4.1) illustrative example of

Math Art in Chapter 5). As I continued to learn more about this classroom and the learning experiences that occurred, I noted this use of mixed modes was a norm in this classroom context. Different technologies were available; the students did not necessarily use digital tools in this classroom but engaged in various learning tasks, from writing pencil paper tests to molding sculptures with clay. The students also engaged in group projects with their peers in all four of their core subjects (science, social studies, language arts and math). These projects often began with an inquiry provocation, presenting students with a problem and issue, and the students were requested to find solutions or answers to their self-generated questions.

I found out early during my data collection that the youth in this classroom were articulate: perhaps an anomaly in comparison to other grade 6 classrooms I had been a part of in the past and in my own experiences as a K-12 educator. In the settings I had taught in, ELL students were often less articulate than non-ELL students because they were new to the English language. However, these students were able to clearly express their meaning-making processes, perhaps due to their advanced English language proficiencies. They had explicit reasons for their choices, and they were eager to explain them to me. Teachers encouraged and modelled this behaviour in the classroom, often asking students to rationalize their choices. I noted how this practice utilized the knowledge process of *analyzing critically*, addressing research question 1.

I also noted the sense of community when observing my participants' interactions. Whether it was helping each other or providing an encouraging word, the students in this classroom were supportive of each other. I noted very little conflict (when there was conflict, issues were resolved through discussion). Most of the youth referred to their peers as friends. To understand social relations in this classroom, I asked students early in my study to draw eco-maps for me (see Figure 4.2 for Eddy Teddy's [focal participant, see Table 4.1] example).

Researchers (e.g., McCormick et al., 2008) noted how eco-maps allowed researchers to gain a more in-depth understanding with regards to the informal and formal supports which might not be easy to learn via an interview or a basic survey. These eco-maps gave me a better understanding of the social groups in the classroom, and my initial analysis of these eco-maps helped me design my student focus groups (discussed in the previous chapter).

What I also discovered when analyzing these individual eco-maps, and later analyzing the follow up interview data, was the importance of these social groups in the classroom. The girls in the classroom were grouped loosely into three friendship groups (consisting of about three to four other peers). For example, I noted the social connections between Eddy Teddy, Starfire, and rainbow unicorn (focal participants, see Table 4.1) early in my study; their eco-maps confirmed this connection (see Figure 4.2). The boys could also be grouped into two broad friendship groups. One group consisted of youth who were on the sidelines of the class social action. Being on the sidelines did not equate to these students having conflict with their peers, but rather their friendship groups consisted of peers in the other grade 6 classes at this school. Although friendship groups were important, the students' eco-maps included others. Notably, all the youths' eco-maps included members of their immediate family (e.g., mother, father, siblings). As I learned later through two of the illustrative examples, *World War 2 Effects* and *Silly Putty*, discussed in Chapter 5, family members such as a father or grandparent played a critical role in the meaning-making that occurred in this technology-enhanced classroom context. The teachers and I (as a friend) were also included in many of the eco-maps.

**Figure 4.2:** *Eddy Teddy's Eco-Map*



As I mentioned previously, from the 25 participants I selected six focal participants for this study (see Table 4.1). Discussed in Chapter 3, these six focal participants were selected due to their involvement in the 5 illustrative examples (which I will discuss in the next chapter). Loosely grouped into a social category I would term as “techno-kids,” these youth used technology for a variety of purposes and in various learning spaces, detailed later in this dissertation. All six focal participants were English Language Learners. The profiles of these students are derived from various data including researcher journals, interviews, digital/non-digital artifacts, emails, and informal conversations. The profiles help answer my research questions by deepening our understanding of the learning experiences in this classroom, and they introduce some of the lifeworld practices that occurred in interstitial learning spaces. I introduce the focal participants in the following order: 1) Eddy Teddy, rainbow unicorn and Starfire, 2)

Babycupcake101, 3) Samy, and 4) mint marker. Table 4.1 summarizes key information about my focal participants: linguistic backgrounds, their interests, and how they utilized technology.

**Table 4.1: Overview of Focal Participants**

	<b>Eddy Teddy</b>	<b>rainbow unicorn</b>	<b>Starfire</b>	<b>Babycupcake101</b>	<b>Samy</b>	<b>mint marker</b>
<b>Age</b>	11	11	11	11	11	11
<b>Linguistic Background</b>	Punjabi Advanced English Language Proficiency	Punjabi Advanced English Language Proficiency	Punjabi Advanced English Language Proficiency	French Advanced English Language Proficiency	Punjabi Intermediate English Language Proficiency	Pashto Intermediate English Language Proficiency
<b>Interests</b>	-Loves Food -Loves to Draw -Loves to Text -Dance Club at School	-YouTube -Making Rainbow Loom Bracelets -Loves Music -Enjoys using her computer	-Reading -Writing -Watching “Go Teen Titans” -Singing -Dance Club at School	-YouTube -Loves Music -Loves writing -Uses social media	-Making Rainbow Loom Bracelets -Loves Cultural Dancing	-Hockey -Sports -Playing Outside
<b>Ways they use Technology</b>	-School -YouTube -Connect with peers	-School -YouTube -Vine -Connect with peers -Listen to Music	-Creating videos -Connecting with peers	-School -YouTube -Snapchat -Social Media -Vine	-School -Connect with Peers	-School -Make work more visible

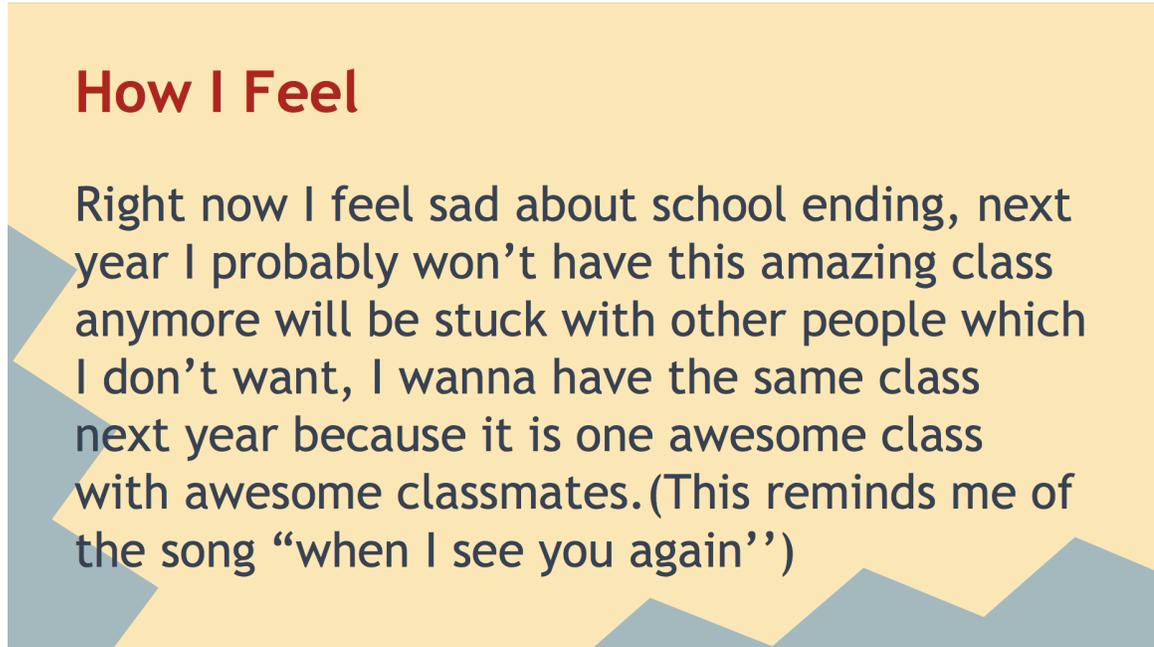
#### 4.6 Eddy Teddy, rainbow unicorn, and Starfire

The girls, Eddy Teddy, rainbow unicorn and Starfire are introduced together as they were a notable friendship group; this knowledge came from field observations, informal conversations and artifact collection (e.g., researcher journals, eco-maps).

At the start of the study, Eddy Teddy was 11 years old (turning 12 in March during the study). She came to Canada from India at the age of one. Her immediate family included a brother and her parents; some of her extended family were still living in India. Eddy Teddy enjoyed fashion and dressing in clothing that expressed her feminine side. She also enjoyed food, especially pasta, which she wrote extensively about in her researcher journal entries. What distinguished her from her classmates was her energetic and flamboyant nature. In the classroom,

Eddy Teddy was an active member of class discussions. She always volunteered answers. As a student, Eddy Teddy was an advanced English Language Learner, according to the provincial assessment, and was able to communicate effectively orally and in writing. Eddy Teddy was also always keen to share her life events, whether afterschool activities or thoughts about what she was learning in class. She referred to me as her “favourite adult friend” and frequently emailed me after school to update me on her life. Well-liked by her peers, Eddy Teddy was part of the social scene in the classroom (for example, Eddy Teddy played an influential role in Rap Battles, one of the illustrative examples I discuss in Chapter 5). Her afterschool activities included the dance club at the school and cultural dancing classes outside of school. She enjoyed drawing, loved to text-message her friends, and listen to music on her iPod. I noted throughout the study that technology was significant in her life: the informal learning experiences occurring in her daily life were often related to digital technologies.

**Figure 4.3:** *Eddy Teddy Researcher Journal June 2015*



In addition to loving school Eddy Teddy enjoyed being social, and this sociability was significant in her young life. She liked her “amazing class”; as seen in Figure 4.3, an excerpt from her researcher journal, she also related her life to the music she listened to. As previous K-12 literature has also noted (e.g., boyd, 2014), music is part of the social fabric of these youth’s lives. In many ways, songs can be considered identity markers. Eddy Teddy cited the song *When I see You Again* performed by the musician Wiz Kahlifa (2014) as it reminded her that goodbye was not forever; she would see her friends again in the future.

Rainbow unicorn was, in her own words, 11 and a half years old at the time of this study. She was also Eddy Teddy’s friend. Her immediate family consisted of her brother and her parents. Her family originated from India although she was born in Canada. She described

English as her second language and Punjabi as her first. Her favorite pastime was creating rainbow loom band charm bracelets because she felt the charms were very cute.

*I mostly would prefer technology because it is faster and a long with technology*

*I would prefer using music (Rainbow Unicorn Researcher Journal, February 2015).*

As this excerpt from her researcher journal shows, technology was a critical part of her life. She used her laptop every day for at least 30 minutes to an hour. During this time, she listened to music, chatted with her friends, and watched Vines and YouTube channels such as Superwoman or My Drunk Kitchen. Rainbow unicorn was a “tech-girl.” She answered emails quickly, sometimes seconds after I sent my previous email as she was online often, and she also navigated her computer competently.

In the classroom context, she was silent during whole class discussions, not offering her ideas publicly. However, with her friends she was talkative and always willing to share her ideas. She explained this quiet nature in class in a researcher journal entry.

*I don't really like talking [especially] in class because I feel like my answer is going be wrong or people are going to [criticize] me, otherwise I enjoy talking (rainbow unicorn Researcher Journal, February 2015).*

Rainbow unicorn also expressed an interest in video games, writing stories, cooking, drawing and sports. Her interests were multifaceted but what stood out for me, as a researcher, was her technology skills and interest to use technology as a way to engage in meaning making. The learning experiences that she engaged in the interstitial learning spaces most often involved the usage of technology.

Starfire was a friend of both Eddy Teddy and rainbow unicorn, a 11 year old girl who liked to write, read, and talk; in particular, she loved to read scary books. Her favourite show was

*Teen Titans Go*; her love for the show was reflected by her pseudonym choice of “Starfire,” her favourite character, and she also wrote extensively about this show in her Researcher Journal entries. Starfire loved singing; during the study she successfully auditioned for the end-of-school-year Talent Show. She had two siblings, a brother and a sister, and also lived with her parents. In Chapter 5 I discuss the influence that her family, in particular her father, had on her school project.

Starfire was born in Canada. An additional language was spoken at home (Punjabi), but Starfire’s English-language proficiency level was high. My first impression of Starfire was that she was a bright and articulate girl whose future career plan was to become a biologist. Academics was a high priority for Starfire; reflecting on her personal goals in her researcher journal, she expressed her top priority as obtaining good grades in school. On several occasions I noted that when her peers were socializing during class, Starfire would move away so she could focus on her work. In these circumstances, she wanted to make sure she did her assignments correctly rather than be distracted by her peers. Starfire used a variety of different technologies to communicate (e.g., emailing her friends and myself, creating a video for her researcher journal). For the illustrative example of Rap Battles (discussed in Chapter 5), Starfire’s researcher journal shows she played a significant role as Eddy Teddy’s “ghost writer” for the Rap Battles.

Eddy Teddy, rainbow unicorn, and Starfire often worked together on class projects, including their business project Silly Putty (which I discuss in Chapter 5). They also communicated regularly outside of school using social media and email. It is clear that all three girls used technology both inside and outside of the classroom.

#### 4.7 Babycupcake101

*I also love watching YouTubers I enjoy their presence on my computer screen*

(Babycupcake101 Researcher Journal, February 2015).

Babycupcake101 is best described as a “YouTuber,” an active consumer of culture (Jenkins, et al., 2016) who spent many hours watching “YouTubers” on her digital devices at home and at school. An underlining theme in this study, on which I elaborate further in this dissertation, is searching for information on YouTube and the movement of ideas from this interstitial learning space to other learning spaces, including school-sanctioned spaces. Like Babycupcake101, other students in this classroom also watched YouTube videos, including one student who created videos for YouTube.

In Babycupcake101’s own words, she was “obsessed with the internet and cheese” (Babycupcake101 Researcher Journal, February 2015). Her obsession with the internet, besides watching YouTubers, included regularly engaging in social media, notably Snapchat, and watching Vines. She was passionate about music as a part of her life and everyday activity. Her favourite musicians included Ed Sheeran, Shawn Mendes, and One Direction (especially one of the ex-band members, Zahn). Similar to Eddy Teddy, she related to the musical lyrics, connecting these words to her own life experiences.

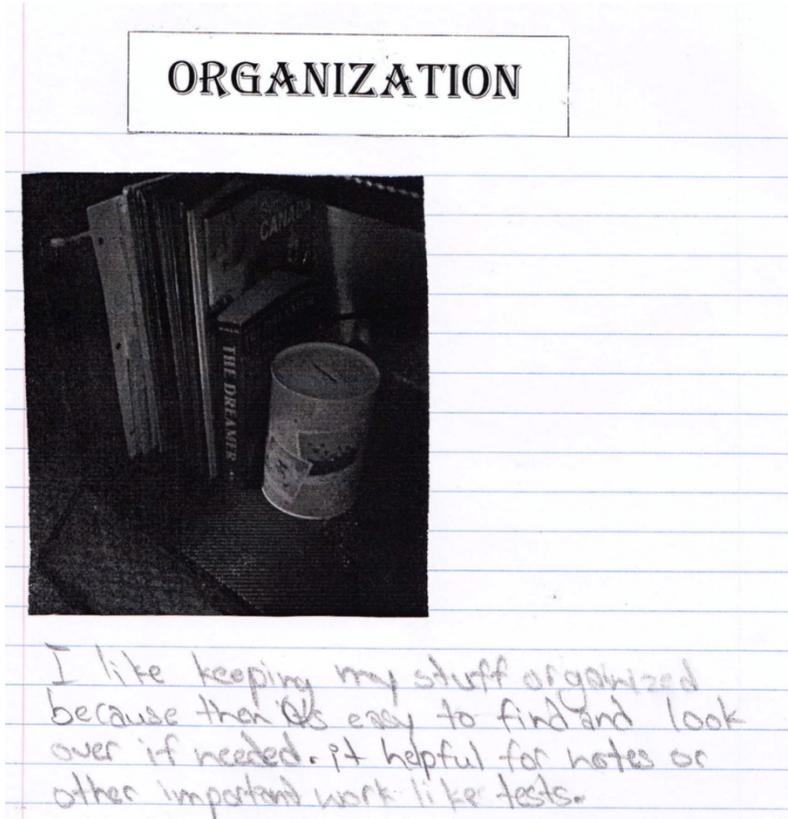
When I met Babycupcake101, I was struck by her personality. She was an articulate girl who enjoyed being social. During our many conversations, both in person and virtual, Babycupcake101 had a keen awareness of how she felt about certain topics and was able to express herself clearly. She was an active participant in class and volunteered her contributions

regularly. At the time of the study, Babycupcake101 was 11 years old. Her home life included her parents, and her home language was French, but her English was advanced: on the provincial English as a Second Language assessments, she was at the highest level. She enjoyed writing and expressing herself in that way. She valued technology and during several interactions, mentioned how she wanted an iPhone 6 or 5s as this was the latest technology available.

#### **4.8 Samy**

Samy, 11 years old, was an extremely articulate girl: always keen to provide me with details regarding her understandings and meaning-making processes. She was academic and wanted to be successful in school. My first one-on-one interaction with Samy was during a Celebration of Learning event (discussed later in this dissertation) I attended near the beginning of my study. Samy guided me through the evening by explaining in detail her thought process behind each learning artifact, including one of her math projects (which I examine in further detail in this dissertation). From an immigrant family, Samy was born in India and came to Canada three years before this study. Her first language was Punjabi, in which she was proficient before coming to Canada. According to her teachers, she was at an intermediate English language proficiency level in terms of the provincial ESL assessments. Bhangra, Indian cultural dancing, was part of her after-school and weekend routine. Samy had many other hobbies, including making rainbow loom bracelets and rings. Religion played a significant role in her life, and she attended her temple every Sunday.

**Figure 4.4:** *Samy's Researcher Journal, February 2015*



As seen in the researcher journal entry above (Figure 4.4), Samy enjoyed being organized, and this preference was reflected in her schoolwork. When Samy shared her work with me, I noted that her work was neat and easy to navigate (e.g., the pages were in her binder, work was written in her notebook). In her researcher journal entries, Samy enjoyed mixing modes (Kress, 2000) such as text and visuals. Samy had personal preferences when it came to the modes she used when engaging in meaning-making, preferences I discuss further in this dissertation.

#### **4.9 mint marker**

My initial impression of mint marker was that he was a boy who enjoyed watching hockey. Whenever the local team played, mint marker and I would have an animated discussion in class about the game. However, hockey was not mint marker's only passion; he also enjoyed

drawing, playing outside, playing sports, and eating pizza. Mint marker came from a large family consisting of three brothers, one sister, and his parents (mother and father). He attended the mosque, explaining that his father wanted him to learn about religion. At the time of this study, mint marker was 11 years old. He was born in Canada, his first language was Pashto, and his teachers assessed his English language proficiency at an intermediate level, according to provincial ESL assessments. In Chapter 5, I elaborate on how mint marker also enjoyed rapping, which is documented in the illustrative example, Rap Battles. He was a key participant in this interstitial learning space.

In class, mint marker often listened to music on his iPod while researching information for a project or completing a math assignment. He told me in an informal discussion that listening to music helped him to work better. Mint marker did not often participate during class discussions; he was quiet and hardly ever offered his opinions voluntarily. However, during class time, he worked hard and was usually on task.

During one of my initial exchanges with mint marker, he discussed how technology made his work more visible. We were in Frankie's classroom, his homeroom, and he was sitting on a stool at a table closest to the large window. He had a laptop and he was working on his assignment. I sat beside him to get a better look at his assignment on the screen. I asked him if he liked the computer a lot and his reply was "not that much." Later in our conversation, mint marker clarified why he used technology: for convenience. What I learned from this interaction was that mint marker used technology for a particular purpose. He recognized this purpose, and although he did not like technology, he knew that using it made his work more visible and helped him to accomplish his schoolwork. Similarly, the other participants in this study had a specific

purpose for using technology: whether it was watching YouTubers, videogaming, listening to music, communicating with others, or completing schoolwork.

In this chapter, I introduced the students and some of the resources for learning (the *known*) these students have the possibility to access and mobilize. I also introduced the school vision. I have learned that in this technology-enhanced environment, both the school district and school visions, influenced by provincial policy frameworks, played a significant role in guiding teaching practice, and I elaborate further on this in the next chapter. I have also discussed how digital technologies were used to accomplish classroom routines such as taking attendance or signing out equipment. Students in this class used digital and non-digital modes to express meaning, including drawing pictures (by hand and on the computer) and using emoticons. Finally, as described in their researcher journals, in the interstitial learning spaces, students were engaged in a range of informal learning experiences which included watching videos on YouTube, playing video games, and using Snapchat. In Chapter 5, I describe ways in which these informal learning experiences differed from the school-sanctioned learning spaces.

In Chapter 5 I focus on illustrative examples—learning tasks that were part of this technology-enhanced classroom—to focus on answers to my two research questions. I explore the knowledge processes students used when engaged in the inquiry-based tasks designed by their teachers (Research Question 1). What will become apparent from the report of the findings is that the two research questions are related, and that the knowledge processes teachers targeted in their learning objectives encouraged students to bring in their lifeworld practices. More concisely, students were invited to bring in their *known* into the classroom to support the completion of school-sanctioned tasks. Therefore, I also elaborate on how the *known* mediated the learning that occurred in other learning spaces (Research Question 2). I will discuss my

analysis and findings with the related research literature. In Chapter 6, I conclude by discussing implications of these findings for pedagogy and future research.

## Chapter 5: The Learning Tasks of a Technology-Enhanced Classroom

### 5.1 Contextualizing the Chapter

In this chapter, I illuminate the innovative student learning experiences that occur which are designed by teachers and often co-designed with their students to potentially bridge multiple lifeworld practices. I present findings that answer the two research questions guiding this study:

1. What knowledge processes do learners use in inquiry-based tasks designed by teachers in a grade 6 technology-enhanced classroom?
2. Relative to the knowledge processes used in inquiry-based tasks, in what ways do learners mobilize *the known* (as unique to them) across learning spaces?

To answer these two questions, I investigate the knowledge processes used by students by examining five illustrative examples in this chapter. Four of these illustrative examples (Math Building Project, World War 2 Effects, Math Art, and Silly Putty) occurred in school-sanctioned learning spaces (Wong, 2019): that is, spaces where the “official learning” occurs. Typically, in these spaces the learning was governed by curricular goals and institutional expectations. These four illustrative examples comprised of two individual student projects, produced in response to teacher-designed class assignments, and two small group projects. As mentioned previously, key to contextualizing this school-sanctioned learning space is learning about what knowledge processes students activated and how these processes provided a springboard for teachers’ task design and pedagogical moves. In this classroom, inquiry-based learning approaches were prevalent, likely due to the school district and school visions (see Chapter 4) that formed an important part of the larger context (see Figure 4.1). To illuminate the learning experiences in interstitial learning spaces, I also discuss a fifth example of an activity in one interstitial learning space (i.e., back of the classroom and hallways): Rap Battles. I include this Rap Battles example

to show how the learning experiences in interstitial learning spaces are realized relative to school-sanctioned experiences.

The following sections of this chapter describe each of the five illustrative examples (Math Building Project, World War 2 Effects, Math Art, Silly Putty, and Rap Battles) and provide a detailed discussion of the knowledge processes and ways that the *known* (lifeworld practices, knowledge and meanings) moves from one learning space to another, thus addressing my research questions. These illustrative examples will feature my six focal participants (selected from my 25 student participants). At the beginning of each illustrative example, italicized sections (vignettes) represent data taken from my researcher journal, field notes, and interview data. The purpose of these vignettes is to help the reader better contextualize each illustrative example and provide more information on what I experienced daily in this technology-enhanced classroom.

## **5.2 Co-designing a Math Building Project: Connecting the World**

*It was early in my study. I had been invited to the Celebration of Learning night at Cypress Hills School. The parent invitation for the evening read, “[the] Grade 6 students invite you to join us in celebrating your child’s learning success and take part in our inquiry on **growth**” (Cypress Hills School, 2015). Prior to the start of my research, the grade 6 students had an opportunity to visit three different locations across the city where they could design their own questions for inquiry. There was a yearly application process to learn at these different locations (public library, school district head office, city hall). The teachers had completed this application process prior to this school year and through a rigorous competition had been successful. At each location, students were engaged in learning experiences designed to explore their own questions. The teachers met with on-site specialists (also K-12 educators) several*

months prior to their classes participating. At these meetings, the teachers and on-site specialists discussed the potential “essential questions” and learning intentions based on curricular outcomes. Teachers also came up with provocations and learning activities that allowed the students to explore and come up with wonders and questions prior to the off-site learning experience. The off-site specialists kept in contact with the teachers on a regular basis so that when the students arrived at the off-site learning site, the specialists were aware of where the student inquiries were heading and how to continue to facilitate student learning. For example, in grade 6 (in this province), students learned about government and notions of democracy. As a result, the essential questions the students explored in this technology-enhanced classroom included ones that focused on democratic rights. At one of the locations, students (with the support of their teachers) explored different topics related to democratic rights (e.g., creating a future school, creating a city in Minecraft [a video game that enables you to build structures]). All of these inquiry projects had students consider cross-curricular connections (e.g., how big is the Minecraft city? [math connections], what technologies should be used in a future classroom to support learning? [science/technology connections] and deepen their understanding of the notions of democracy [a social studies connection]). These projects also extended the learning that had already occurred in the classroom (e.g., such as the Pillars of Democracy).

I pulled up in my car to the school early. Several cars were already parked on the street and I watched as parents and students were walking into the front door of the building. As I entered the school, I was greeted by teachers and students. A large portable SMART board was set up in the foyer. On the screen images of students engaging in their inquiries were shown on a video. Artwork (non-digital) done by students was also displayed on large easels on the right hand side of the SMART board. After a brief exchange with one of the grade 6 teaching team,

*Steve Craft (teacher chosen pseudonym), I walked into the learning commons. The room was a large one with shelves of books, some lined against the wall and other bookshelves in the open space. There were rectangle-shaped tables with black colour chairs scattered around the space. In some areas there were also plush armchairs. On other occasions, I had seen students sitting in the various spots of the room working on projects or reading the books. The learning commons was one of the many general spaces in the school building. It was open to all students before, during and after school. Parents and students were gathered around the left hand section of the large space. The bulletin board was set up with the words, "Future School" (see Figure 5.1), this was a project done at one of the off-site learning experiences mentioned earlier. The students were asked to consider and design an ideal classroom in the future. In Figure 5.1, the future school/future classroom envisioned by Samy and her peers is described. In the centre of the picture there is a visual created by the students of the physical configuration of the future classroom (e.g., where the chairs will be and tables). Each of the black and white papers around the image described the actual classroom design (e.g., high top tables are used so that students who wish to stand can, green spaces/plants are incorporated into the design to help kids get energy, laptops are available for students to do their research). Samy was standing ready to present. She waved as I came closer. We had a brief exchange where I asked if she could share her work. She started her oral discussion about the "Future School" project. Several of the parents came closer to listen to her as she elaborated on how her group had come up with the initial ideas and what their finished product was. Samy used the bulletin board display to complement her detailed oral description of the "Future School" her group had envisioned. After her brief presentation, several of the parents asked a few questions and Samy answered them without hesitation and skillfully.*

*After listening to Samy's oral presentation, I excused myself and went upstairs to Frankie's classroom. In the various grade 6 rooms in the building, work was displayed. It was no different in Frankie's room as all of the tables and counterspace were filled with completed projects that had been done over the course of the school year to date. A portable SMART board had been wheeled into the space (there was already a mounted SMART board at the front of the classroom). The screens were also projecting student projects. When I entered the classroom, students were standing around their projects and talking with parents. PeaceMaker shared the survey she had conducted (see Figure 5.2). This was another project that had been done over the course of this school year so far. She asked her peers what they preferred, "Tech or Paper?" Her teachers had requested that the students in the classroom create surveys to ask the class (based on personal interests). Peacemaker had been personally curious about her peers' personal preferences for tech or paper. Her survey results indicated that most of her peers (63%) preferred Tech.*

*After visiting with several other students, I went down the stairs to Enya Turnbull's classroom. The space was empty except for Samy. The SMART board was set up. She was eager to share another project, Math Building Project, with me (the illustrative case I will discuss below in 5.2.2).*

Figure 5.1: Future School

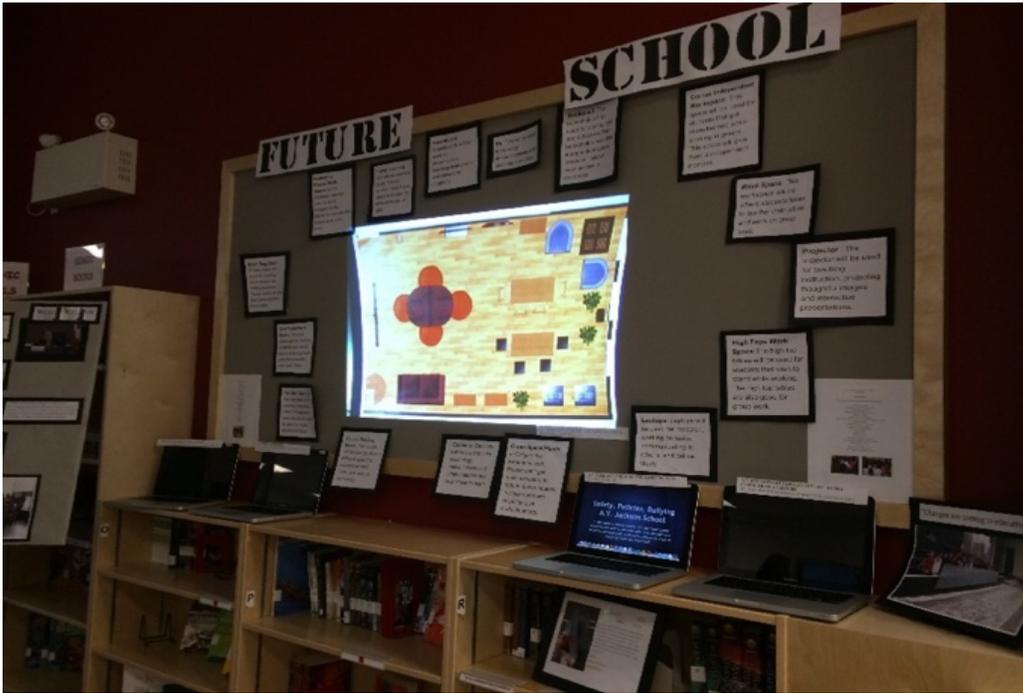
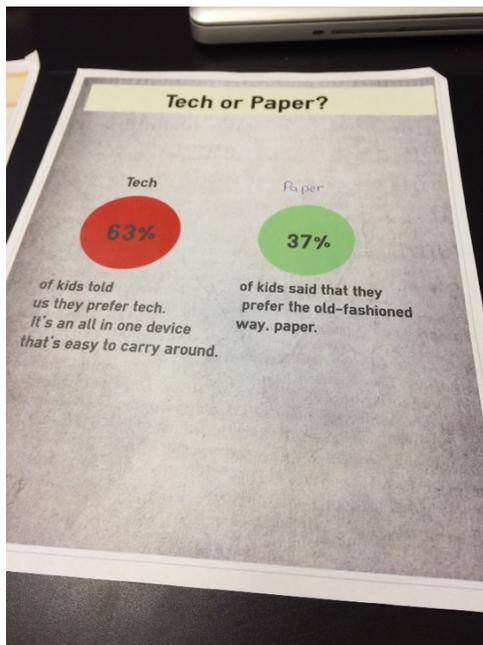


Figure 5.2: Tech or Paper?



### 5.2.1 Debriefing the Vignette

The learning tasks discussed in the vignette above are meant to provide a better understanding of context (see Figure 4.1). As I will discuss further below, the context, in particular the school vision, influenced what knowledge processes students activated when engaged in their inquiry-based learning tasks (which is also suggested in Figure 4.1 where the knowledge processes are situated within the context. The context having a potential impact on what knowledge processes are intended to be activated by teachers).

As described in the vignette, the grade 6 teachers as a whole at Cypress Hills School designed and/or co-designed a number of content and literacies learning tasks for their students during the course of this study. The Celebration of Learning evening showcased some of the school tasks and projects students were able to engage in (e.g., Future School, Minecraft home, Tech or Paper survey). In these projects, students were able to explore their personal inquiry questions and interests in core subject classes: math, science, social studies, and language arts. Students were also challenged to explore essential questions related to bigger interdisciplinary curricular concepts: for example, in the program of studies, the big idea for Grade 6 was “democracy” and “government”; therefore, teachers and students explored essential questions connected to these curricular concepts (see Alberta Education, 2005).

In the vignette I briefly discussed the Future School project, in which students were provided with an essential question, for example: “imagine a school in the future. How would you design it?” These students were also challenged to consider both the current reality of a school and how this reality could be changed or improved. Here, the teacher targeted the knowledge process of *applying creatively* where students were encouraged and asked to apply their current knowledge of the school to an unfamiliar setting, the future. With this project,

students also engaged in other knowledge processes such as *experiencing the known*, where they drew on their background knowledge of the present-day classroom and what they needed to create a classroom. They also activated the knowledge process of *conceptualizing by name*, identifying differences and similarities between the present and future classroom they had designed. It appears the knowledge process of *conceptualizing with theory* was activated, in which a weaving occurred between what students had experienced and what they were conceptualizing in terms of a future classroom. As well, *analyzing functionally* occurred; students were reasoning and determining cause and effect: for example, “I added this feature to my classroom and this will happen.” Finally, the knowledge process of *analyzing critically* was activated; students needed to critically analyze their own experiences in their present-day classroom and how they might change this.

The Future School project was interdisciplinary with students considering mathematical concepts (e.g., measurement of room), information and communication technology (e.g., using technology to research classrooms) and career and technology foundations (e.g., responding to challenges) (see Alberta Education, 2017). Students also mobilized their knowledge and knowledge processes across different curricular learning spaces, for example, the students take their understanding of a present day classroom (*experiencing the known*) and apply this to a future classroom (*experiencing the new*). Here, we see a movement of knowledge processes. Such interdisciplinary projects were very common in this technology-enhanced classroom; as I discuss in this chapter, the context (see Figure 4.1), including the school vision discussed in Chapter 4 created by the principal, played a significant role as to why such projects flourished. Notably, the principal cultivated a school culture that encouraged both learners and teachers to engage in learning experiences that were meaningful, rich, rigorous, and that made connections

across knowledge processes, subject areas and to the real world. So when reflecting on the learning intention (see Figure 4.1) of the Future School, a task encouraging students to *apply creatively* what they knew into an unfamiliar setting, it appears that students were critically thinking and reasoning about why certain choices needed to be made to improve a classroom as well as engaging in different types of multimodal literacies such as visual design, linguistic design, and spatial design.

As described in my vignette, the teachers had designed a task which had students explore creating their own surveys, a mathematical outcome from the Math program of studies (Alberta Education, 2016). Peacemaker conducted her survey on whether students preferred to use “tech vs. paper” because of her personal interest in this topic. She was able to do this because the teacher both welcomed and provided an opportunity for students to explore personal questions. Activating the knowledge process of *experiencing the known*, Peacemaker developed written literacies related to a particular genre of “the survey” with respect to language elements and design format. Her process is also an example of what Cope and Kalantzis (2015) term authentic pedagogy, which is relevant to the student’s life and interests. A pedagogical move on the part of the teacher was to target the knowledge process of *experiencing the known* in this classroom to ensure that students had opportunities not only to tap into their personal interests but also draw from their background knowledge and multiple lifeworld practices.

Projects like Peacemaker’s survey illuminate instances where “pedagogical weavings” occur where in school learning and practical out-of-school experiences are intentionally welcomed into the classroom context (Cazden, 2006). García-Sánchez and Orellana (2019) argue that “schools have a history of not recognizing the knowledge and abilities of such young people [minoritized youth]” (p. 3). I believe this notion of pedagogical weaving has potential as a key

way to bridge lifeworld practices: that is, teachers intentionally create opportunities, rather than “erase” or “ignore,” to allow students to bring their practical lifeworld experiences into the classroom context, which include encouraging activity types such as *experiencing the known* and *applying creatively*. However, to do this effectively, teachers need to understand the experiences students have in lifeworld contexts. Teachers also need to recognize that the *known* students bring into the classroom are changing due to the affordances of digital technologies, such as the ability to access information using Google, Wikipedia, and YouTube. The illustrative example Rap Battles, discussed later in this chapter, highlights how rich these lifeworld experiences are. Further, as Early & Kendrick (2017) have argued, bringing in the rich experiences (linguistic and cultural) students have outside the class has positive implications for learning in the school-sanctioned environment.

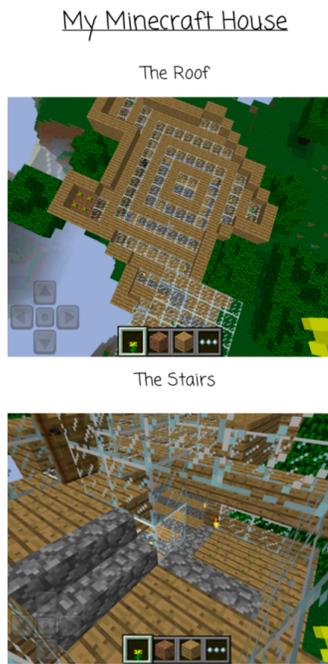
In another example of a student co-designed inquiry project, a group of students in the classroom used Minecraft to create an “imagined home” (see Figure 5.3). Students *experienced the known* by drawing on their lifeworld knowledge of Minecraft and activated *analyzing functionally*: reasoning and drawing inferences between cause and effect (e.g., if I build my house this way, it will look like this and serve this purpose). The teacher also co-designed tasks and projects to target certain types of activities that would involve learners activating the knowledge processes of *experiencing (the known and the new)*. Panda, who used the digital affordances available in Minecraft outside of the classroom, incorporated this Minecraft knowledge into her school project; she used pixelated blocks from the Minecraft learning space to build an imagined house. She first activated the knowledge process *experiencing the known* (her interstitial knowledge of playing on Minecraft, part of her *known*) and then activated *applying creatively* when she took her Minecraft knowledge and capabilities from one setting

and adapted them to a different setting—the school project (Cope & Kalantzis, 2015) (this instance answers research question 2).

As I elaborate further in this dissertation, my second research question is also addressed through observing that students often tapped into their *known* from their various learning spaces in school-sanctioned and interstitial when engaging in classroom activities. Students accessing their *known* was often possible because, by targeting such knowledge processes as *experiencing the known* and *applying creatively*, the teachers created opportunities that encouraged these students to bring ideas and practices, their *known*, from their various learning spaces into the classroom. As discussed in Chapter 4, most ELL students in this classroom had advanced English language proficiencies; therefore, they brought into the classroom a variety of learning experiences, including a range of literacies. These literacies often included their non-sanctioned (interstitial) learning experiences, for example, gaming or effectively accessing information from digital resources, rather than the addition of their first languages, probably because for many of the students, their literacy abilities in their L1s remained under developed.

With this Minecraft activity, Panda also engaged in multimodal literacies such as visual design, spatial design, and linguistic design. These learning experiences, a part of Panda's *known*, included learning how to use the pixelated blocks in Minecraft to build and being able to navigate the digital spaces competently. Figure 5.3 shows a screen capture of Panda's Minecraft home. This particular example also highlights the knowledge processes of *applying creatively*, applying knowledge in a different setting; and *experiencing the known*, bringing in something familiar (her *known*), which is her knowledge of using pixelated blocks in Minecraft.

**Figure 5.3:** *Panda's Minecraft House*



To summarize, the previous vignette has illustrated a range of the learning tasks in this technology-enhanced classroom: providing a better understanding of the context and which types of learning tasks and knowledge processes occurred regularly (addressing research question 1; also see Figure 4.1). In the following illustrative example, Math Building Project, in addition to the activation of a range of knowledge processes, two salient themes are illuminated: applying mathematical concepts to complete assignments and students applying technological knowledge to communicate the processes and product of their inquiry-task, which is part of these students' *known*. These learning tasks afforded opportunities for students to mobilize and to weave knowledge and their *known* between and across different learning spaces (addressing research question 2).

### 5.2.2 Introducing the Math Building Project

The Math Building Project was Enya Turnbull's and students' codesigned learning task. I selected this project for a number of reasons. First, this math content and literacies learning project was designed by both teacher and students and such collaboration being common in this technology-enhanced classroom. Second, the learning project targeted certain knowledge processes which allowed students to tap into personal interests, and also apply mathematical concepts to an actual context—redesigning the school building (this will answer research question 1 as it addresses the knowledge processes students used in inquiry-based tasks). Below, I present excerpts of interview and visual data to explore the knowledge processes, both content and literacies, that the learners use and Enya Turnbull aimed to promote in her inquiry-task design (this answers research question 1). It is suggested that these intended knowledge processes align with the context (see Figure 4.1) as well as the school district and school visions (described in Chapter 4 and reiterated earlier in this chapter), and explain why this task was engaging for her students. This task also met both the curricular objectives in terms of mathematics for the grade level: specifically, calculating area and perimeter and using standard units of measurement (metres) (Alberta Education, 2016), and achieving the learning intentions of the task (see Figure 4.1).

The name “Math Building Project” came from Samy, although Enya Turnbull referred to the project as the “Math Design Project” (I elaborate further below on the instructions Enya Turnbull provided to her class). Before beginning the “Math Building Project,” the teacher in this school-sanctioned learning space first taught the skills: such as how to measure using a ruler, how to calculate perimeter. By teaching the necessary skills to do the task, the teacher sought to activate the knowledge process of *experiencing the new*, whereby for content learning to occur,

learning needed to be scaffolded. Here, didactic pedagogy along with other types of pedagogy (e.g., authentic) were used. But at times, the teachers in this classroom deemed it most effective to explicitly teach concepts rather than letting their students engage in authentic pedagogy in situated practice. These teachers made this choice largely because they knew their ELL students would benefit from explicit language and content instruction associated with didactic pedagogy (Singer & Fenner, 2020). These teachers also frontloaded (that is, didactically taught) the necessary mathematical vocabulary to do the tasks they assigned. As I discuss later in this illustrative example, this approach allowed students like Samy to activate the knowledge process of *conceptualizing by naming*. She was learning to use specific mathematical terms and generalizing terms and vocabulary, thus also *conceptualizing by theory*. With these knowledge processes, the students were learning important elements of disciplinary discourses and literacies.

As noted in the previous chapter regarding the school vision, Principal Ispirazione discussed how she wanted learning at Cypress Hills to connect the disciplines and make connections to the real world. The focus of professional learning at Cypress Hills and the school district was often on these two areas. At the teacher professional learning sessions, teachers participated in tasks which modelled how teachers could effectively design tasks to incorporate opportunities for students to connect disciplines and make real-world connections. Teachers also engaged in regular teacher planning meetings. At these meetings, all teachers planned together (math, science, social studies, and language arts). They considered curricular connections among the disciplines and attempted to create tasks that crossed disciplines. These meetings were strategic; often teachers discussed the activity types (knowledge processes) as well as the curricular learning objectives they would be targeting in their task design. Most importantly,

these teachers looked at the curriculum not as separate subjects, but rather as an opportunity to engage in interdisciplinary learning across all core subjects when possible. Overall, these practices and beliefs about learning were a part of the social fabric and context of Cypress Hills school, and it is suggested that the Math Building Project reflected the core beliefs in this context (e.g., making connections and doing meaningful tasks).

At a later date after the Celebration of Learning, Samy and I sat down and had a conversation about her math building project, which she collaboratively researched and worked on with three other girls (Starfire, duck, and Crystal). Samy was the most vocal member of her group, so she volunteered to talk about the project. As there was no breakout room available in the building, we had our conversation in the staffroom, a large open space with big windows that made the room bright and inviting. I had brought my laptop along so that we could view the students' PowerPoint slides while Samy described the project.

During our discussion, Samy recalled how “. . . we had a project that Enya Turnbull gave us like our class we thought of it my friend weareanonymous he was the one that came up with this and the teacher really liked it...” Both the teacher and students were involved in co-designing this learning opportunity; as mentioned previously, such collaboration was a regular occurrence in this technology-enhanced classroom; thus, the theme of co-designing learning tasks was salient across much of my data. This practice of co-designing also illustrates once again the knowledge process of *experiencing the known* (Cope & Kalantzis, 2015), where learning was real and about “everyday stuff of the world” (p. 17) and built upon students' experiences, activities, and interests. Reflecting back to Figure 4.1, I can see how the math building project is an example of teachers making an effort to connect the design of learning tasks, with the context of the school and district goals. Connecting the curricular outcomes and making them relevant

and authentic appeared to be the teachers' intentions in this classroom. For example, teachers like Enya Turnbull wanted her students to connect mathematical concepts they had learned to a real-life context, a redesign of a school, by building on and upon the resources of everyday interests; in this way, Enya Turnbull was engaging in authentic reflexive pedagogy. It is through this co-engagement in designing that individuals "transformed" their relationships with each other and also transformation occurred with themselves (New London Group, 2000). As I discuss below, students had to work cooperatively in groups; students also took on different roles such as project manager, engineer, architect, communication consultant. When Samy spoke about the project, she emphasized each individual's role and their responsibilities rather than just her identity as a student, demonstrating a transformed relationship where students were not just classmates and group mates but now "project manager" or "communication consultant."

For the instructions for the project see Figure 5.4.

**Figure 5.4:** *Math Building Project Assignment Instructions*

"Your challenge is to work in groups of no less than 3 and no more than 4 peers to design a "better" school. Points to consider:

- [Cypress Hills School] is at capacity. All classrooms are currently used, so less classrooms are not an option.
- As a school in [Western Canadian School] we heat our building most of the school year. What design would make the best sense when considering heating costs associated with our (most often) cool environment?
- Use of space in all dimensions. Consider and provide perimeter, area of floor space and volume.
- Flow of students. Sufficient staircases and exit doors are a must.
- What role does the surrounding landscape have in design?
- What value do aesthetics have in design?

The assignment outlined a few factors to consider about the current physical structure and design of the school (e.g., Cypress Hills School is at capacity with all classrooms currently being used; therefore, there is a need for more classrooms). Also, heating costs had to be reduced and spaces

created that allowed for a smooth flow of students in the building. From these criteria, Enya Turnbull was encouraging and facilitating personal exploration; every group would have their own school design and there was not one right answer. She was therefore implementing authentic pedagogy (Cope & Kalantzis, 2015) with an attempt to be relevant and true to life. Enya Turnbull was also targeting the knowledge process of *analyzing critically* where students were asked to engage in reasoning and establishing functional relations such as between cause and effect (e.g., when we do this with our design, this will occur).

Students took up the assignment in similar ways. First, they measured the entire school and calculated the perimeter of the building; the knowledge processes activated were *conceptualizing by theory* and *applying both appropriately and creatively*. These processes are significant because students were applying the mathematical concepts and skills they had already been taught by Enya Turnbull—such as how to calculate the perimeter and measure a space using standard units of measure (metres)—both appropriately and creatively in an actual context. Here again, this pedagogical weaving brings students into a real-life experience where they were transferring the understandings they have developed in other knowledge processes/activity types (Cope & Kalantzis, 2015). In a classroom, one way teachers can ensure “deep” learning occurs is to consider the notion of academic transfer (Stern et al., 2018), more specifically the idea of concepts and understandings being transferred from one task to another. When students *apply appropriately* and *creatively*, teachers are able to see and assess this transfer of learning. It is in this transfer where educators see learning occur.

After measuring, students used the school building blueprints provided by Enya Turnbull and their own perimeter calculations to consider and reimagine the school space. Here, the knowledge process activated were *analyzing functionally* and *applying creatively*. Again, this

application to real-life offers opportunities for transferring their understandings. The final product created by most groups was a PowerPoint presentation that similar to what Samy used as a visual to discuss her project during our interview, and which addressed their school redesign in detail. To create their PowerPoint presentation, students engaged in multimodal modes of meaning, including linguistic design and visual design. Samy and her group also had to tap into their *known* of how to use PowerPoint to create their project: that is, how to put text on the page, how to change the font size, how to add pictures, how to change the themes or colours of the slide.

Also important to note here is one of the assignment's "points to consider" (see Figure 5.4): "what value do aesthetics have in design?" (which refers to the design of the future school). After analysis and discussion with Samy, I found that the girls in her group were more focused on creating a school design that reduced heating costs, created ease of usage, and that utilized the entire physical space efficiently. The focus of the girls' design was not on aesthetic features; this was an area these girls chose not to address.

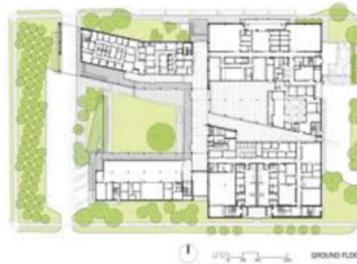
Samy also elaborated on how Enya Turnbull asked all of her students to take on various roles when working on this project: namely project manager, architect, communication coordinator, and engineer (Figure 5.5). I briefly discussed these roles earlier and expand on them here. Students worked in groups for this particular project. What I noted during my analysis was a theme of "making connections across disciplines," salient across all of my data and a theme in the school vision as described in Chapter 4 (see Figure 4.1 for the context as well). Through these roles, students were encouraged to learn by *applying creatively* conceptual knowledge. Cope and Kalantzis (2015) argue, "applying is about as real as education gets" (p. 21). Here, Enya Turnbull was facilitating a task that connected curricular concepts to a context. But in this

project, students were provided with an opportunity to “role play” and apply abstract mathematical concepts to a real-life context, redesigning their school building. As I learned later during a conversation with Enya Turnbull, and after I gained access to the assignment directions for this project, Enya Turnbull provided the students with a description of each role (see Figure 5.5).

**Figure 5.5:** *Math Building Project Student Roles*

**Student Roles:**

1. **Project Manager** – the “go to” person in the group who should be able to speak to the work everyone is doing and fill in any lapses in labour when necessary.
2. **Architect** – the designer of the new school who should be able to justify all decisions made through the design process.
3. **Engineer** – the technical expert of the group. The one responsible for measurements and numbers for all three dimensions.
4. **Communications Consultant** – expert responsible for speaking to the work happening. Responsibilities include documenting the process and learning taking place and putting together all documents for final project submission.



The role descriptions in Figure 5.5 gave the students a brief but clear understanding of each of the roles they were to enact. These roles gave the students a specific purpose and a job for completing the Math Building Project. It appears that these roles helped with classroom management as well since each student had a clear focus. It is suggested from my field notes and observations that most students were on task and completed their work.

When having the students take on various roles, Enya Turnbull designed opportunities for students to practice the knowledge process of *experiencing the new*, where the learner encountered an unfamiliar domain of experience. These roles were not familiar to them, nor was the task of redesigning this school. These students were also *experiencing the new* with both the

information and the new experience of being a “project manager,” “architect,” “engineer,” or “communication consultant.” Therefore, in order for learning to occur, scaffolding was needed (Cope & Kalantzis, 2015). In this project, Enya Turnbull provided this scaffold by breaking down the task and giving each student a specific “role” or area to focus on rather than expecting students to do every single part of the project. With this scaffolding, the teacher entered the Zone of Proximal Development (Vygotsky, 1978), allowing these students to encounter this new learning in a safe environment. Enya Turnbull broke down the task in several ways: frontloading the necessary vocabulary (academic vocabulary), then teaching her students how to measure and use appropriate units for measurement (e.g., metres) and how to calculate perimeter. Considering ELL students in her classroom, it is suggested by the knowledge processes activated by students, Enya Turnbull recognized that both scaffolding language and explicit language instruction were important for these ELL students (see Calderón & Slakk, 2020; Singer & Fenner, 2020).

Figure 5.6 below, a slide from the girls’ PowerPoint, illustrates how the girls in Samy’s group described their roles in this building project. They used the roles Enya Turnbull suggested in her instructions (Figure 5.5) but elaborated on what each member of the group did daily. Although indicated as Day 1 / 2 on the slides, Samy noted that measuring the school and doing these tasks took several classes and days.

Figure 5.6: Roles of the Students

Project M	Architect	Engineer	Communication.C
+ Starfire	+Samv	+duck	+Crystal
*Starfire is helping duck measuring the length and width of the classroom. they are both done the measurements for the class now they get the measurements of the class room	*Duck has started drawing the new school she is on the first floor and done drawing the rooms also the gym, office and she started labeling the rooms.	*duck is measuring the mechanical room because she is done measuring the class-room.	*Crystal has been taking pictures and recorded everyone's work she has also been helping Samv with some design ideas

Figure 5.6 shows that each girl in the group had a specific role (Architect, Project Manager, Engineer, and Communication Consultant) and also a specific task: measuring the length and width of the classroom, drawing the new school, taking photographs, recording everyone’s work). These tasks also indicate the range of literacies involved in the groups’ team work; students engaged in a variety of multimodal meaning-making activities encompassing spatial design, linguistic design, and visual design. It suggests that the literacies in which these students engaged were richly varied: from digital literacies (e.g., creating a PowerPoint slide) to architectural literacies (e.g., referring to blueprints and creating new ones), to mathematical literacies (e.g., using standard units of measure to figure out the perimeter and area of the school building).

Mills (2010) discusses the notion of Knowledge Assets (*context knowledge, textual knowledge and technological knowledge*), and describes these as what students learn. With this in mind, Figure 5.6 illustrates the knowledge assets of *content knowledge*, where the girls draw

on facts, concepts, and theories from the designer's head. In this situation, the girls are drawing on their knowledge of measuring length and width of a classroom, how to calculate perimeter, and their understanding of standard units of measurement.

Figure 5.7, Figure 5.8, and Figure 5.9 below, provides screen captures taken from the group's PowerPoint presentation, show both the new and current school designs:

Figure 5.7: New School Design (Part 1)

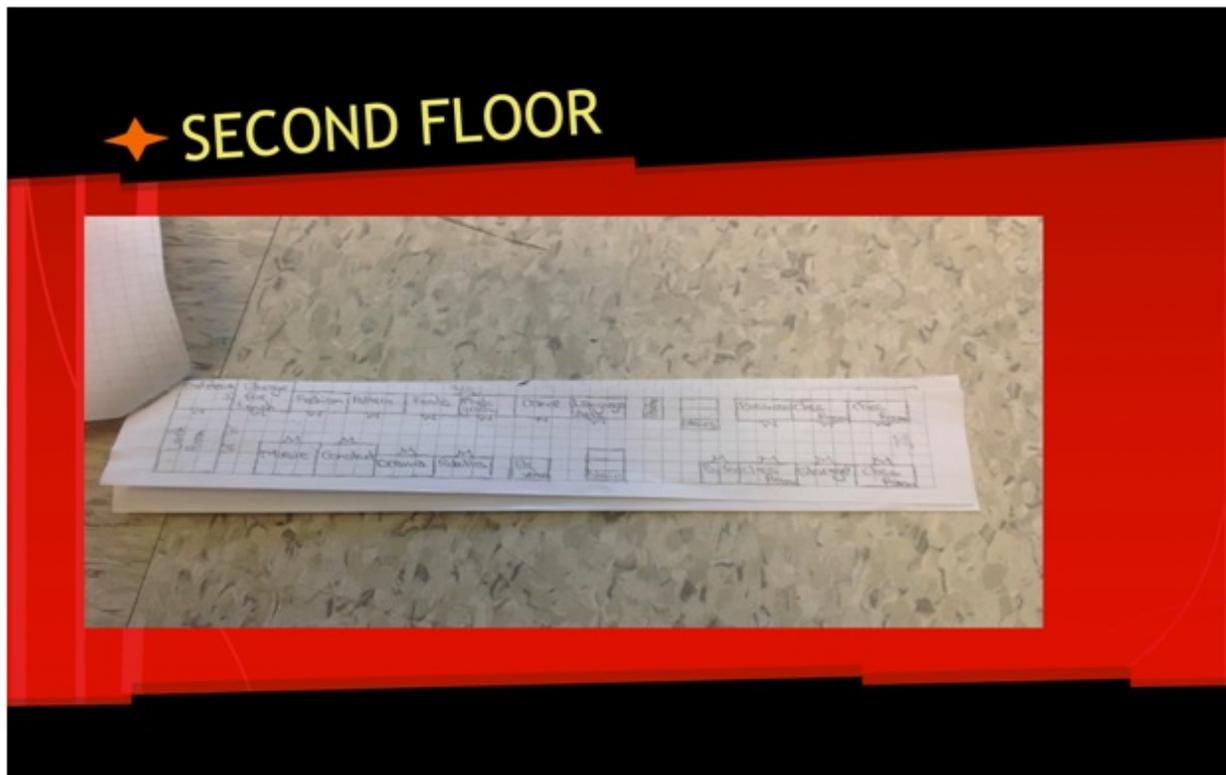
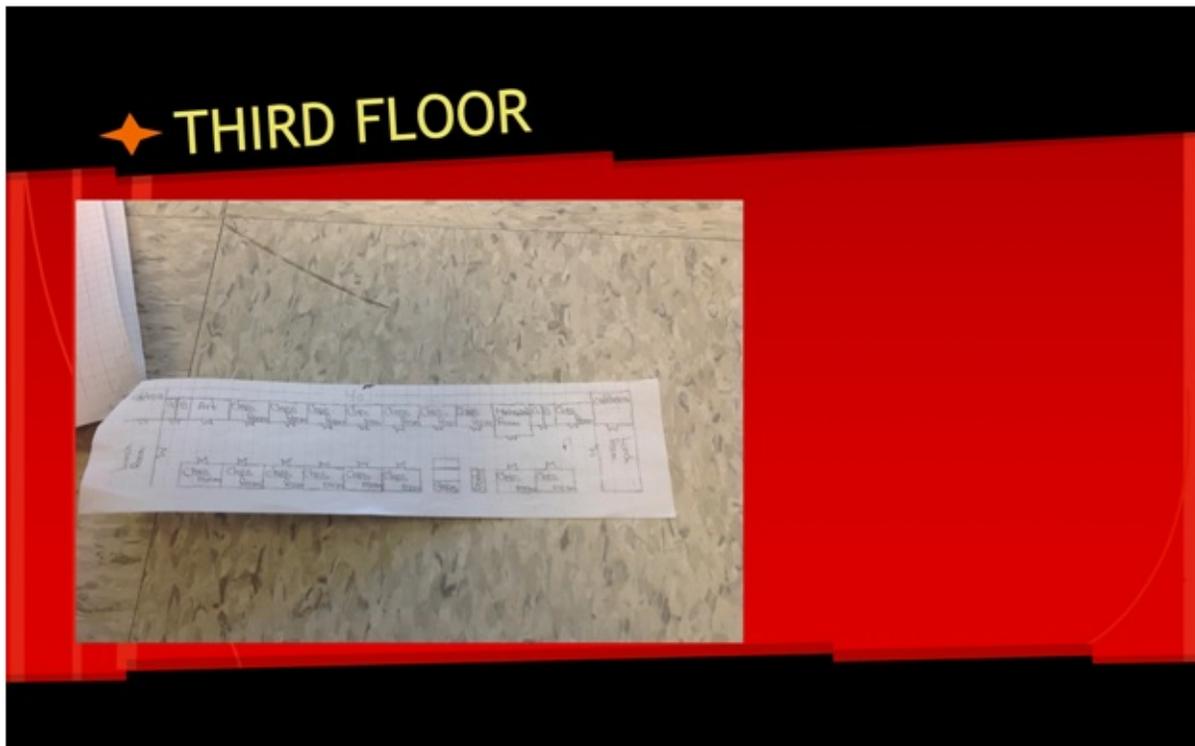


Figure 5.8: New School Design (Part 2)



### New school Numbers

$9711\text{m}^2 \rightarrow 9600\text{m}^2$   
 $\div 3$   

---

 $3200\text{m}^2/\text{floor}$

$3200\text{m}^2$

area = length  $\times$  width

$3200 = 20 \times 160$

$3200 = 40 \times 80$

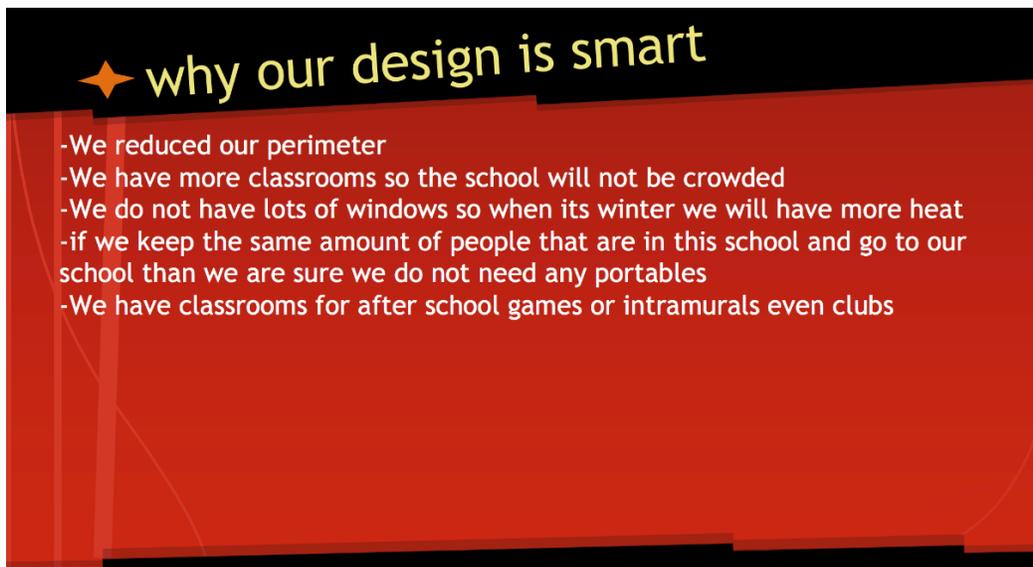
The perimeter is 240m

I Say 40 by 80 is better because instead of having the length smaller than the width bigger we should have equal sides. equal side.



Figures 5.7 and 5.8 show the new design the girls came up with, while Figure 5.9 is a blueprint of the current school design (provided by Enya Turnbull), which the students used to measure and calculate the perimeter of the current space. Samy told me in an informal discussion that they took several days to measure and calculate the perimeter of the entire school (note their calculations in Figure 5.9). They also did the same with their own/new design (Figure 5.8). Again, these activities indicate the presence of the knowledge processes *applying appropriately* and *creatively*. However, more significant is how the girls were able to provide a rationale to justify the reasons why their design was “smart;” here, they were activating the knowledge process of *analyzing critically and functionally*.

**Figure 5.10:** *Why Our Design is Smart*



In Figure 5.10, the slide shows the reasoning around the choices Samy’s group made in their school design. During our discussion, Samy tapped into her *known*, her prior learning experiences, or more specifically, what Mills (2010) terms textual knowledge, in that she was able to provide a straightforward oral explanation about the PowerPoint slide. She also used her technological knowledge to create and design a PowerPoint presentation. She provided the

reasons why her group's design was "smart." She was thus familiar with the idea of rationalizing her choices and articulating them. For example, in a previous conversation unrelated to this project, Samy explained why she made the choices she made, such as why she used a pencil to draw in her researcher journal instead of typing on the computer—she wanted to be able to change it.

Like Samy, many of her peers were able to clearly articulate their choices and reasoning around their decisions. In this school-sanctioned learning space, students were encouraged to provide rationales for their choices and explain their thinking, therefore encouraged to activate the knowledge process of *analyzing critically*. With this Math Building Project, as noted by the artifacts and discussion above, Samy's group made specific choices with their school re-design and they (or at least Samy in this example) were able to clearly articulate why these choices were made: they reduced the perimeter, they made more classrooms so the school would not be as crowded, they reduced the number of windows to save money in the winter because there would be more heat. This example also shows how a communicative function like supporting one's position is part of the communicative repertoire in this classroom. As Rymes (2012) notes, the concept of communicative repertoires refers to the collection of ways individuals use language and other means of communication such as gestures, dress, posture, and accessories to function effectively in the multiple communities in which they participate. In this case, supporting one's position is part of the learning space the teachers and students had constructed, which was part of the larger school context (Figure 4.1). Supporting one's position also reflects the New London Group's (2000) argument that "students need also to develop the capacity to speak up, to negotiate, and to be able to engage critically with the conditions of their working lives" (p. 13).

Students like Samy have, in this context, been socialized into the practice of explaining their thinking and expressing their ideas and thoughts.

The New London Group also discusses design conventions, particularly a few key ones including discourse, styles, and genres. Enya Turnbull's Math Building Project required the students to show their learning about design conventions. Some of the groups chose to create a PowerPoint presentation (Figures 5.7, 5.8, 5.9, 5.10 above are examples of slides Samy's group created). Other groups used Minecraft or Google Slides. In the PowerPoint slide examples above, students were required to activate a variety of knowledge processes pertaining to design. However, students also brought into this classroom various aspects of their *known* from their lifeworld experiences outside of the classroom. For example, during the Math Building Project, Samy and her peers brought in technological knowledge from their previous learning experiences which they used to complete their assignment.

The six focal participants all expressed an interest in using digital technology and were knowledgeable when it came to using laptops, mobile devices, and various media applications. As Figures 5.7, 5.8, 5.9, and 5.10 show, Samy's group was proficient in using PowerPoint (e.g., making tables, changing font on the page) to complete their project. However, other focal participants such as mint marker did not prefer using technology. As a result, technology was not necessarily a knowledge asset for him, or at least knowledge that he deemed to be an asset. He used technology simply to complete his assignments for school since this was what was expected of him. This is an example of a "outlier." The example of mint marker illuminates how although these students might be considered "techno-kids," the assumption cannot be made that all of these students view technological knowledge in the same way. Therefore, it is suggested that when it comes to teaching 21<sup>st</sup> century competencies, teachers need to be mindful of the differing

subjectivities, interests, intentions, commitments, and purposes that students bring to their learning (New London Group, 1996) and what are the potential implications for task design.

### 5.2.3 Exploring Meaning-Making

As mentioned in the previous section, the students in the classroom brought various aspects of their *known* to the classroom: Samy's group in particular brought technological knowledge as an asset such as knowing how to use PowerPoint and being able to take digital images of their work and import them into PowerPoint. This technological knowledge was helpful since the girls were able to create PowerPoint slides which displayed and addressed not only Enya Turnbull's assignment requirements but also their understandings of concepts such as perimeter and using standard units of measurement. This technological knowledge enabled Samy and her group to create a PowerPoint and activate the knowledge process of *applying creatively*, applying technological knowledge learned at another time and learning space to create an effective PowerPoint design. This is an example of students mobilizing their *known* across learning spaces (which addresses research question 2).

In the following classroom activity, technological knowledge was at times less important than modality preferences. Samy's group used a variety of different modalities to accomplish their Math Building project, including both digital and non-digital modes. Using pencil and paper, they calculated and measured the perimeter of the school. They also used digital tools such as PowerPoint to create a visibly appealing presentation to summarize their project. When I asked Samy the reasons why her group chose the colours they did, she explained that a member in her group, Crystal, made the choices because "she had this as our colour the school is red and she thought like it the [Cypress Hill's] builders so we can have it as red too because our school mostly has the colour of red."

For this illustrative example, Rose's (2016) four sites of critical visual methodology is also relevant. According to Rose, there are four sites in which the meanings of an image are made: *site of production* (where the image is made), *site of image* (is the visual content), *site of circulation* (where the image travels) and *site of audiencing* (where the image encounters users or spectators) (p. 24). Rose explains that at these sites, three different aspects called modalities contribute to the critical understanding of an image. These three modalities are *technological*, *compositional* and *social*. Of particular interest here is the *compositional* modality, which "refers to the specific material qualities of an image or visual object" (p. 25). Rose elaborates on how, when an image is created, it draws on a number of strategies (e.g., content, colour). In this illustrative example, it is clear the girls drew on a number of strategies, including colour, to create these images. Colour is arguably a crucial component of an image's compositionality: for example, "colour can be used to stress certain elements of an image" (p. 65). By using red, the colour of both the building and the school logo, Samy's group (which they named Cypress Hill's Builders) wanted to stress their connection to their school (see Figures 5.7, 5.8, 5.9, 5.10). A further illustration of mobilizing meaning-making from students' lifeworlds across learning spaces.

#### **5.2.4 Summarizing the Math Building Project**

This illustrative example illuminates how teachers and students co-design tasks. It is suggested that this co-designing provided the learners with agency, a crucial component of the task design and a reason why this task was engaging to students like Samy. Co-design was also an important pedagogical move on Enya Turnbull's part. These students were not passive participants; they had agency and opportunities to contribute to the learning tasks occurring in this school-sanctioned space.

With regards to Research Question 1, Enya Turnbull also sought to activate various knowledge processes such as *experiencing*, *applying*, *conceptualizing* and *analyzing* when designing the Math Building Project tasks. In particular, the knowledge process of *experiencing the known* was activated most frequently during this task design. Aligned with the visions of the school and school district, this knowledge process focused on personalization of learning (see Ontario Ministry of Education, 2013b; Sizer, 1999), relying on students tapping into their personal interests and drawing on the learner’s lifeworld experiences. By using the knowledge process *experiencing the known*, what occurred was “pedagogical weaving” (Cazden, 2006), a significant pedagogical move in which Enya Turnbull made connections between school learning and practical lifeworld experiences of learning (Cazden, 2006).

Below is a table which summarizes briefly the knowledge processes/activity types activated by students in this illustrative example (answering research question 1).

**Table 5.1: Math Building Project Knowledge Processes Summary**

Context	Illustrative Example/Learning Tasks (learning intention)	Data	Knowledge Processes
<ul style="list-style-type: none"> <li>• School District Vision</li> <li>• School Vision</li> <li>• Teacher Philosophies</li> <li>• Students’ experiences outside of the classroom (e.g., using various digital technologies such as PowerPoint)</li> </ul>	<p><b>Math Building Project</b> -connect/apply math concepts to an actual context</p>	<p>Interview Data Project Artifacts (PowerPoint, Assignment directions)</p>	<ul style="list-style-type: none"> <li>• Experiencing the Known--allowing kids to tap into their personal interests/background knowledge</li> <li>• Experiencing the new--scaffolding the learning (e.g., frontloading the vocabulary)</li> <li>• Conceptualizing by Name--learning to use generalizing terms/vocabulary, pre-teaching the math concepts</li> <li>• Conceptualizing by Theorizing--putting concepts together</li> </ul>

		<ul style="list-style-type: none"> <li>• Analyzing Critically--reasoning and establishing functional relations (e.g., cause and effect; I do this with my design and this happens)</li> <li>• Applying Appropriately--taking concepts learned and applying (e.g., perimeter and applying it to measuring the actual school space)</li> <li>• Applying Creatively--taking concepts learned and applying in new innovative ways (e.g., applying the concept of perimeter understanding to make a new school design and PowerPoint Presentation Design)</li> </ul>
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The Math Building project also exemplifies scholarship (e.g., Clifford & Marinucci, 2008; Dewey, 1993) on inquiry-based learning. Unlike more traditional approaches of learning, there was no one expected solution to the project. Similarly, it encouraged “creativity” and opportunities to engage in meaning-making in a variety of ways. It posed a problem and question for the students to explore. It also reflected what the New London Group (2000) asserts with regards to how “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). These subjectivities, that in part constitute the *known*, were a critical part of the task design. Enya Turnbull invited her students to bring in their *known*, their interests and lifeworld practices, therefore meshing curriculum with different subjectivities and further opening possibilities for greater access by her students. As well as accomplishing these curricular goals, Enya Turnbull also served as a mentor and guide to learners: a key component of the school district’s vision of

Personalization of Learning (see Ontario Ministry of Education, 2013b; Sizer, 1999) in which a teacher facilitates the personalization of learning.

In the previous chapter, I explored both the school district and school vision, suggesting that this vision was a critical part of this particular classroom context (see Figure 4.1). During my interview with Principal Ispirazione, she elaborated on how part of the school vision was to create a school which encouraged rich, rigorous, meaningful, and authentic learning experiences. Through my data analysis, the salient themes (from my codes in the thematic analysis) of this interview (discussed in Chapter 4) included “connecting to the world” and “teachers and students as co-designers of learning,” suggesting that both the school district and school vision played a significant role in fostering learning experiences such as the teacher creating and co-creating tasks with students.

In the project reported above, students moved their content learning from *experiencing (known and new)*, to *conceptualizing (naming and theorizing)* to *analyzing (functionally and critically)* and *applying (appropriately to creatively)*, thus we witness a comprehensive covering of a rich range of knowledge processes in one inquiry project (see Table 5.1). It was suggested by the knowledge processes that the students’ activated that Enya Turnbull’s pedagogical moves included encouraging students to move knowledge processes across tasks in this inquiry project such as when creating a new building design to first *applying appropriately* mathematical concepts such as calculating perimeter and then *applying creatively* this mathematical concept of the calculating of perimeter to create a new smart building design. Here, I noted a movement of knowledge processes. I also noted a salient theme which was applying mathematical concepts to complete assignments (addressing research question 2). In this illustrative example, students applied abstract concepts (e.g., such as calculating perimeter) from one realm of their life to

complete concrete and practical tasks (e.g., creating a new building design) in another realm. With respect to Research Question 2, students were also accessing their technological knowledge of creating and designing PowerPoint presentations and mobilizing this practice from other learning spaces to the context of this inquiry task to demonstrate their learning processes, the steps they took to accomplish the task, and their final product (the building design) for the assigned task. The salient theme identified from the data and identified across other cases here was students applying technological knowledge to communicate the processes and product of their inquiry-task; this salient theme addresses one of the ways that students mobilized their *known*. This technological knowledge was part of the students' *known*, experiences and knowledge that a student brought into this classroom whether from past schooling experiences or lifeworld experiences. What I saw in the case was a constant flow and movement of knowledge and ideas; it is suggested by my analysis of the students' learning experiences that Enya Turnbull welcomed this movement by the knowledge processes activated in her task design. Students were able to connect their learning to personal interests (e.g., weareanonymous suggested this idea of redesigning the school, and Enya Turnbull took this idea and codesigned a task with her students). A learning space was cultivated that encouraged students to voice their interests and connect these interests with mathematical concepts. Such pedagogical weaving is the primary reason why students like Samy were successful in applying their mathematical understandings to a different context, and I further explore pedagogical weaving in the remaining illustrative examples. In the following section, I explore the illustrative example World War 2 Effects which extends my understandings of the learning experiences in this classroom.

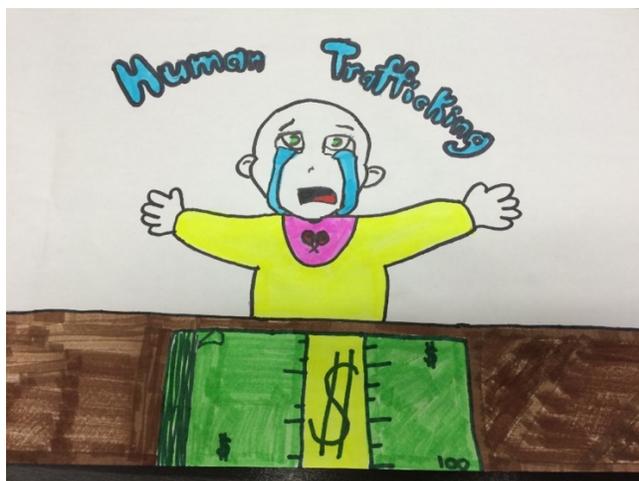
### **5.3 World War 2 Effects: Tapping into the Known**

*Another cold day. Today I was situated in Miss Green's classroom which was located on the first floor of Cypress Hills School. The students were sitting at various cloud-shaped tables in the classroom. At approximately 8:30 a.m., right after attendance was taken, Miss Green was going over the directions for the assignment. She was providing the students with sentence starters (writing them on the SMART board as she verbally discussed them). We were briefly interrupted by school announcements at 8:33 a.m.*

*After the directions were given, the kids were now lined up one person per table-group (as instructed by Miss Green) in front of the computer cart located near the SMART Board at the front of the room. Miss Green was electronically signing out computers to students. She entered the student ID into the computer program beside the computer workstation number (which was located on the computer). By 8:40 a.m. the majority of the students were settled at their table groups. Miss Green reminded the kids to remember to cite where they got their information.*

*Today I sat first with Eddy Teddy, who as usual was keen to speak about her work. Her group was researching Human Trafficking. On the laptop she showed me two articles she had found both related to the topic. She showed me a picture she had drawn depicting a baby being sold for money (see Figure 5.11). Tears were flowing down the baby's face. Eddy Teddy explained that this baby did not want to leave his parents. Our conversation took a different direction when I asked if she preferred drawing by hand or using technology. Eddy Teddy explained, "yeah I prefer drawing hand drawing rather than printing it cuz I feel like hand drawing you can like do anything design or any type of situation you want but if you are like printing off the computer you won't like get the one you really really want accurately."*

**Figure 5.11:** *Human Trafficking*



*After thanking Eddy Teddy, I moved to another part of the room. Samy was working on the laptop when I approached her. She was keen to share her work which she titled, “World War 2 Effects.”*

Before introducing Samy’s work, I will briefly discuss the knowledge processes in the Human Trafficking vignette above and more specifically, the implications of these knowledge processes on Eddy Teddy and the other students’ content and literacies learning. In the vignette above (derived from my field notes, researcher journal, and informal interview transcripts), I was introduced to the Pillars of Democracy Project. Briefly, Pillars of Democracy refers to the four pillars—justice, equity, representation, and freedom—which are fundamental rights held by citizens of a country (see Cable Public Affairs Channel, 2020). This class project, Human Trafficking and World War 2 Effects, explored these Pillars of Democracy further by having students connect their understanding of one of the Pillars of Democracy to a newspaper article or real-life story.

As described above, I learned that Eddy Teddy used Google to research the topic of Human Trafficking. A salient theme in my analysis was ELLs effectively seeking information using internet sources. Students often used Google to find information; part of the students' technological knowledge (Mills, 2010) the *known* in this classroom included their abilities to look up information in this way, also a type of digital literacy. These abilities illustrate the students' competencies especially when it came to choosing specific keywords for a Google search and simplifying their search terms. This ability to seek information using internet sources was significant for a number of reasons: 1) technology provided the affordances to find information quickly and easily and 2) students had access to many different sources of online information such as videos, multimodal texts, and user-created information (e.g., Wikipedia), not only a textbook. All sources have the potential to engage the learners in different types of knowledge processes and literacies, including digital and multimodal. However, I also acknowledge, as I already discussed in Chapter 2, there are potential problems with regards to using digital technologies to seek information. For example, when it comes to students using the internet to find information, there is the potential to encounter deepfakes (see Yadlin-Segal & Oppenheim, 2020). Students in these situations need to be able to navigate the internet but also discriminate with regards to what is real versus fake news.

As shown in the vignette above, Eddy Teddy had created a hand-drawn image (Figure 5.11) which summarized what she learned from reading two online articles on human trafficking: that human trafficking separated families, and as a result there is sadness, especially for the children involved. From this data, the knowledge process of *applying creatively* is evident; Eddy Teddy applied what she knows about the pillars of democracy, *experiencing the known*, and what she had read on the internet, *experiencing the new*, to communicate her knowledge via creating

an original visual that informs and is impactful (Figure 5.11). In her visual, Eddy Teddy used a number of visual elements to convey her meaning, such as facial expression (the crying baby) and colour. Focusing on *the site of the image* (Rose, 2016), in particular *composition*, shows that the image created by Eddy Teddy draws on spatial organization: the crying baby is at the centre of the visual, notably drawing the focus of the audience. The baby's hands are also wide open, perhaps seeking comfort and a hug. Eddy Teddy also used colour such as large blue tears streaking down the face and bright yellow to shift and grab the audience's attention. Such multimodal design elements as visual design and gestural design (New London Group, 2000) work together to help Eddy Teddy to convey her message, which is "this baby did not want to leave his parents." Eddy Teddy also mobilized this knowledge that "babies did not want to leave their parents" from her internet searches on human trafficking, where in online news sources she encountered many images of "children crying because they did not want to leave their parents," into the classroom where she applied her understandings creatively to produce the image of the crying baby. In my next illustrative example World War 2 Effects, I expand upon that when students engage in activity types such as *applying creatively*, they tap into their experiences in other learning spaces such as stories, films, or videos previously viewed concerning children separated from families, including stories they heard from their grandparents or treasure seeking hobbies.

### **5.3.1 Introduction to World War 2 Effects**

In this next illustrative example, I present excerpts of interviews and visual data with an emphasis on the *known*. These *known* played a significant role for Samy, who tapped into a story her grandfather told her to better understand a school-sanctioned assignment. Using this example, it is also suggested that due to the teacher's intentional design of a task—the

pedagogical moves used, or more specifically the knowledge processes/activity types targeted by the teacher—Samy was provided with opportunities to access her *known*, a memory of a story told to her by her grandfather, and move them into the school-sanctioned learning space (addressing research question 1 and 2). It is also further suggested that this intentional task design was made possible because of the classroom and school context (Figure 4.1), previously discussed in Chapter 4. Illuminated in this illustrative example are the salient themes of students effectively seeking information from family experts, students effectively seeking information online (using the internet), and students using their knowledge of digital tools and design processes to represent and communicate knowledge and understandings multimodally (addressing how the *known* is mobilized, research question 2). This illustrative example also highlights how technology played a significant role in how Samy multimodally represented her meaning-making.

According to the teacher, Miss Green, the World War 2 Effects project was a Social Studies assignment asking the students to further their understanding about the Pillars of Democracy (Justice, Equity, Freedoms, and Representation), which formed a part of the curricular expectations in Grade 6 (Alberta Education, 2005). The students at this grade level were asked to explore the notion of democracy through three major units: citizens participating in decision making, historical models of democracy (ancient Athens), and the Iroquois Confederacy (see Alberta Education, 2005). In an earlier interview, Miss Green said, "...there needs to a balance between students figuring things out for themselves which is obviously really important also providing them with the proper tools to let them do it...where some students will need a challenge where other students will need to be guided in certain ways and that is okay." Therefore, she felt students needed to be explicitly taught concepts in order to engage in inquiry-

based learning, and she intentionally scaffolded the learning for her students with mini-assignments. These mini-assignments, through which students had been investigating the Pillars of Democracy over a period of time, focused on explicitly teaching Justice, Equity, Freedoms, and Representation. Thus, Miss Green was using pedagogical moves related to the activity type/knowledge process of *experiencing the new* and *conceptualizing by naming and by theory*. In these lessons, Miss Green defined all four of the pillars of democracy: Justice—everyone has equal rights to fair, just, and equitable treatment); Equity—respecting individual and collective rights and being fair and just; Freedoms—having the right to speak, act, and think responsibly; and Representation— individuals speaking for themselves and/or appointed/elected officials speaking for their constituents (Alberta Assessment Consortium, 2020).

As Miss Green was explicitly teaching curricular concepts, she was providing an entry point for her ELLs. When it comes to effective teaching at various different levels, one of the ways to support ELL students is to “frontload” (teaching didactically/pre-teaching) and scaffold the learning (see Cummins & Early, 2015; Gibbons, 2015; Soto, 2014). It is critical to provide an entry point for each learner by explicitly teaching curricular concepts since many ELL students come with varying background knowledge and experiences compared to those of their native-language peers. From the literature, we know that ELL students are most successful when they are provided with the necessary background knowledge or where their background knowledge is drawn upon as a resource (Cummins & Early, 2015; Gibbons, 2015). Miss Green’s choice in task design to include scaffolds at multiple levels through mini-assignments, such as doing a mini-assignment on By-Laws to teach the Pillar of Democracy, Justice, supported all of her learners, not just her ELLs.

For the World War 2 Effects assignment, students were presented with the following question to consider: *How does what we're learning about democracy connect to real world issues?* This essential question encouraged students to tap into their *known*, their lifeworld experiences, because it was open-ended and welcomed a variety of entry points for students. This assignment was not a methodical activity requiring students to follow a set series of steps, but one that allowed flexibility and opportunities for Samy and her peers to engage in their own personal meaning-making and tap into their interests.

The students were assigned one pillar of democracy each. They were able to work with partners or on their own (which both Eddy Teddy and Samy chose to do). The task was to “find a news story that provided evidence that connected to the pillar” assigned. Miss Green had her students engage in the knowledge process of weaving *experiencing the known* to *experiencing the new*, then *analyzing critically* where the students were required to reason and draw deductive conclusions: for example, this news article provides evidence of this particular pillar and why this is the case. They engaged in the literacy practices of learning a genre (news article), wherein they connected both familiar and unfamiliar texts; one of the curricular learning outcomes in the program of studies (see Alberta Education, 2000) is the ability to make connections between different types of texts. The assignment instructions then asked the students to write one to two paragraphs consisting of an article summary and how this article related to their pillar of democracy. Here, by having to write using summary and argument genres, they activated the knowledge process of *applying appropriately*. Students were also asked to create a visual to represent the meanings in their texts. In this task, their linguistic, visual, and spatial literacies were developed, bearing in mind that they used the appropriate and effective tenor and mode in their design choices: like the example in the vignette above when Eddy Teddy activated the

knowledge process of *applying creatively*. Here, Eddy Teddy took what she knew about the pillars of democracy and what she read online and applied this knowledge to create a visual depicting her understanding of some aspect of Human Trafficking.

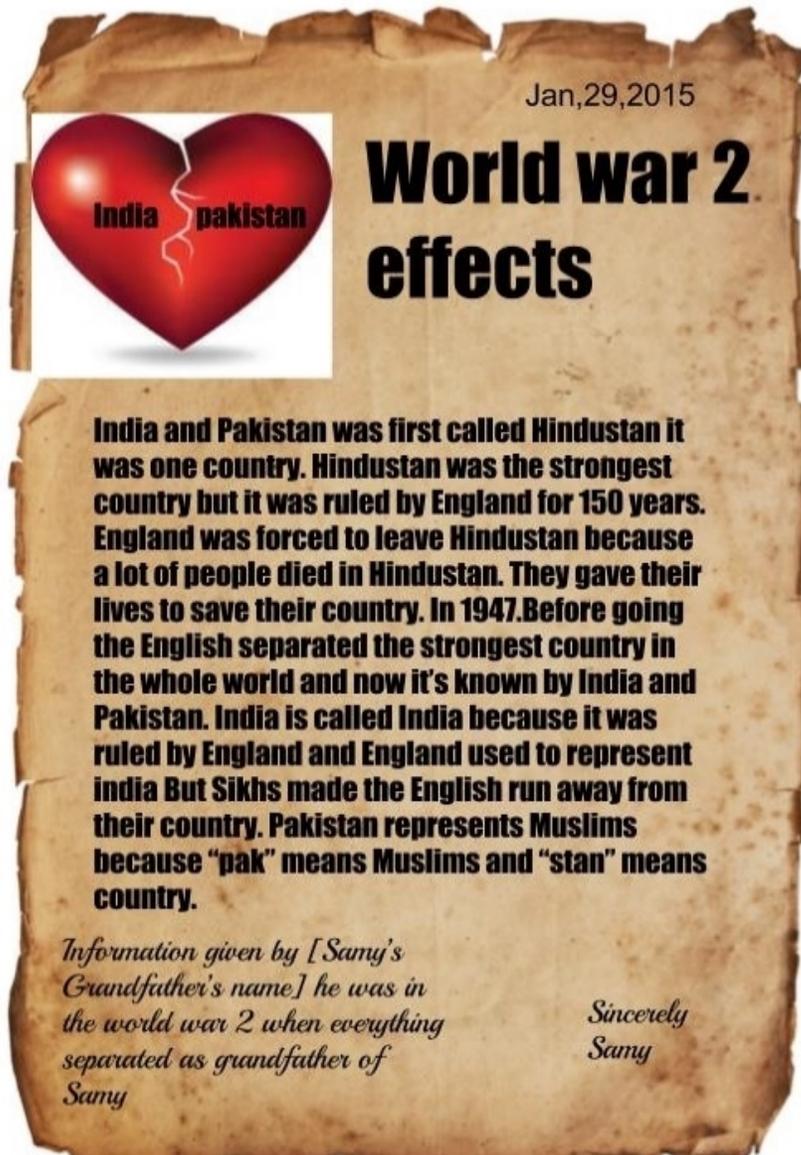
When Miss Green invited students to activate knowledge processes/activity types such as *applying creatively* and *appropriately*, she invited her students to apply their understandings of pillars of democracy to the world—an actual context. For students such as Samy, these types of activities were particularly meaningful for several reasons. First, at the beginning of this study, Samy had been in Canada for only three years. As a result, her life experiences in India (school and home) were different than those of other Canadian students. In many of our one-on-one conversations, Samy described school and home life in India and now Canada. She noted how different school was in India compared to Canada and on several occasions would point out these differences. For example, in one conversation she indicated there was no digital technology in her school in India when compared to Canada. Her family, in particular her extended family (e.g., grandparents, aunts and uncles) played a critical role in her daily life. Therefore, when Miss Green’s task design included targeting knowledge processes such as *experiencing the known* and *applying creatively* and *appropriately*, students like Samy could bring in their past and present experiences from outside of the classroom. Able to weave her past lifeworld and school experiences, Samy could draw on varied aspects of her *known*, such as technological knowledge and past stories told by her grandfather (I elaborate in more detail on these experiences below).

What I learned through my many conversations with students was that the majority of the students created hand-drawn visuals similar to the one Eddy Teddy created (see Figure 5.11). But as I expand on below, some (like Samy) used digital tools such as Google Drawing to create an

image. Like Eddy Teddy, most students used their technological knowledge (Mills, 2010) of how to search Google to find articles and related what they found back to the pillar of democracy they had been assigned. Again, this salient theme in my analysis was effectively seeking information using internet sources, which was a part of the students' *known*. Also, the affordances and access to digital technologies and fast, efficient internet connections in this classroom allowed students to tap into this *known* on a regular basis. For students to complete both a skilled and critical Google search, they needed to have several digital literacies skills including knowing the correct search terms (e.g., key words to type into the search engine to find what they were hoping to find) and the digital literacies to select the right digital resources such as credible websites.

On that February morning in Miss Green's social studies class, Samy and I discussed her work (depicted in Figure 5.12):

Figure 5.12: World War 2 Effects



Early in our conversation, Samy said “. . . my grandpa told me this thing that India use to represent I mean England use to represent India but now they [Indian people] made them go away from their country so now and like Indian government represents India.” The idea for her social studies project came from this story that her grandfather told her about the end of British imperial rule in India; here, she activated the knowledge process of *experiencing the known*. This

knowledge process was a crucial part of this task design since it invited Miss Green's students to bring in their experiences from other learning spaces. It appears that this knowledge process/activity type is critical to use not only with ELLs but all students, since students learn best when they are able to make connections with the world and create personal meaning.

Samy also indicated during our conversation that she was seeking to find an article to address the pillar of "representation" (individuals speaking for themselves and/or appointed elected officials speaking for their constituents; Alberta Assessment Consortium, 2020). To better understand this concept, Samy recalled a story her grandfather told her in a non-sanctioned (interstitial) learning space (Wong, 2019). The salient theme of accessing information from family experts outside of the classroom, such as a grandparent as an expert telling a story is illustrated. The story then moved from this learning space and mediated the learning in a school-sanctioned learning space (Figure 5.12 shows Samy's understanding of the concept of representation and the creation of the text). As well, Samy was engaging in the knowledge process of *applying creatively* by connecting a concept she learned in class to a story her grandfather told her.

During our discussion, Samy was looking up vintage paper using Google search on a laptop. Like her classmate Eddy Teddy, Samy was tapping into her technological knowledge (Mills, 2010); further, engaging in the digital literacy skill of looking up information on Google required her to use certain key search terms (e.g. 'vintage paper' vs 'old paper'). These literacy skills were important for the creation of her assignment. Here again the salient theme of effectively seeking information using internet sources is highlighted. I asked how she learned about vintage paper. She explained, "because I like designing like some treasures I love those like adventurous things so I always like searching up things . . ." As a result, she was looking for

ways to advance this practice. In the past, Samy used the traditional school-sanctioned taught strategy of looking up words in the dictionary and discovered the word “vintage”; as a result, she “searched” the internet using this word. Here, she also activated the knowledge process of *applying appropriately*. This type of literacy skill, being able to search for words in a dictionary and then apply the word found in the dictionary to an internet Google search, shows an instance of Samy connecting learning across spaces, home to school, from designing some treasures and a related internet search to conducting a dictionary word search to searching online for vintage paper (research question 2).

Later, I asked Samy why she made this choice to use vintage paper. She explained she made the choice “because this is really old news so I thought like making it more old by like a getting the background and all that good.” In this illustrative example, Samy intentionally used “vintage” paper to portray a specific meaning. If as Kress (2003) argues, “[m]eaning is inevitably and necessarily realised differently in different modes” (p. 107), then in terms of the site of production (Rose, 2016), this choice of using vintage paper contributed towards the effect the visual might have in terms of the audiences’ interpretation (e.g. it’s old news).

Kress’ (2011) discussion about multimodality also elaborates on the notion of framing. He explains that “the word ‘frame’ names the semiotic resource which separates any entity from other entities; it provides unity and coherence to what is framed, the elements inside the frame. The frame is essential to make meaning” (p. 66). It appears that “old vintage paper” was a framing device (see Figure 5.12). Everything inside this frame occurred in the past since it was created on “old vintage paper.” As Kress discusses, using a comma is different than a semi-colon or having white space versus a bold line; therefore, this framing device “makes demands of . . . [the] viewers and readers to attend to the entities within the frame . . .” (p. 66) which in this

illustrative example is the text containing the story Samy's grandfather told her. Again, Samy's choices are deliberate and intentional, similar to those in the previous illustrative example, Math Building Project, in which the knowledge process of *analyzing critically* is also activated.

In Samy's completed inquiry-project, she acknowledges that the information was taken from a story her grandfather told her (see the bottom left-hand corner of Figure 5.12). The students were expected to cite where they obtained the information they used in their assignments, a requirement about which Miss Green reminded the class at the beginning of the assignment and several times during the course of it. This citation tells me that Samy's grandfather's story was crucial to Samy's construction of meaning as she connected the concept of a pillar of democracy, representation (individuals speaking for themselves and/or appointed/elected officials speaking for their constituents) (Alberta Assessment Consortium, 2020), to her prior knowledge of her grandfather's story. When students are able to make such connections to their background knowledge and experiences, they are able to engage in meaningful learning experiences. The New London Group (2000) speaks about the importance of how both the curriculum and classroom teaching need to engage students' own experiences and discourses. Again, these subjectivities need to be meshed with curriculum, such as incorporating opportunities for students to tap into their *known*. The knowledge process of *applying appropriately and creatively* is also relevant here since in this classroom, learners transferred their prior understandings developed in other previous assignments to a new task: taking a pillar of democracy and making connections to an article and real-life event. It is suggested that effective task design occurs when educators encourage students to make connections to their prior learning (Gibbons, 2015) by using knowledge processes/activity types like *experiencing the known*.

In literature focusing on multiliteracies, two key concepts that help describe multimodal meaning and the relationship of different designs of meaning are *intertextuality* and *hybridity* (New London Group, 2000, p. 29). When analyzing this illustrative example, I find this concept of “intertextual chains,” a historical series of texts, to be relevant. Intertextual chains are tied to these students’ *known*; thus, the text Samy created (Figure 5.12) could be considered part of an “intertextual chain.” The New London Group explains how “text can be viewed historically in terms of the intertextual chains (historical series of texts) it draws upon, and in terms of the transformations it works upon them” (p. 30). Although Samy’s text is an assignment for class that looks at one pillar of democracy, representation, in order to create this text she employed several “historical texts,” or in this case collective memories and lifeworld experiences (knowledge and practices), which she drew on to create intertextual chains, including prior class conversations and assignments about the pillars of democracy, a story her grandfather told her, and her previously learning of the word vintage to successfully search online for old paper. All of these “cross references” and intertextual chains are critical to the shaping of meaning and to the final text she created (see Figure 5.12).

It is suggested by the knowledge processes activated by Samy that this opportunity to “cross reference” and create intertextual chains was made possible by the teacher’s task design, which targeted the activity type/knowledge processes of *experiencing the known* and *applying creatively*. Since students (ELL or not) come to learning with a variety of different experiences, incorporating opportunities such as these into a task design provides multiple entry points for students: especially for ELL students with a variety of language proficiency levels such as those discussed earlier in this dissertation. In these classrooms, students who are beginner English language learners benefit from opportunities where teachers allow them to bring in their rich

lifeworld experiences. As well, students with more advanced English language proficiencies also benefit from experiences where teachers allow them to bring in their various lifeworld meanings and subjectivities. This, it is suggested, is good language and literacy pedagogy.

### **5.3.2 Summarizing the World War 2 Effects Project**

With this particular illustrative task, the rich range of knowledge processes used by the ELL students, and Samy in particular, as detailed above, are arguably afforded by the significant pedagogical moves, targeting particular knowledge processes, made by Miss Green (research question 1). As discussed in the previous chapter, the participants featured in this dissertation had an intermediate to advanced English language proficiency level which facilitated these ‘high challenge, high support’ (Gibbons, 2015) inquiry tasks. According to teacher assessments, Samy at the time of this study was at an intermediate level. When Samy came to Canada, she arrived with a limited proficiency in English, according to school district records. Since arriving in Canada, Samy had progressed quickly in her English language proficiency level for all four language strands: listening, speaking, reading, and writing. This progress might be attributed to Samy’s strong home language proficiency as she could read and write in Punjabi; the importance and role of the home language to develop English language proficiency has been well documented (see Chumak-Horbatsch, 2012; García, 2009; Wong Fillmore, 1991). Samy was also invested in learning English and academics. However, unlike Samy, in this classroom many of the students were not proficient in their home language, or they were more proficient in English. The majority of the participants in this study were born in Canada and had limited opportunity to learn to read and write in their home languages. This could be the reason why these students did not use their home languages as a linguistic resource when completing assignments.

At the same time, although most students were not drawing on their home languages or cultural knowledge as a resource in the classroom, it is suggested from my data analysis that in this classroom the way teachers designed tasks allowed students to engage in open-ended exploration and invited students to use their *known*. These students, including Samy, drew on these interstitial learning experiences and technological knowledge (e.g., searching for vintage paper using a Google search engine) to support them with school-sanctioned activities. When Samy drew on a story her grandfather had told her to help with her understanding of a social studies concept, she was able to do this because her teacher designed a task that encouraged the knowledge process of *applying creatively* to occur. The salient theme of effectively seeking information from family experts was present here (research question 2). The teacher also used the knowledge process of *experiencing the known*, where students were welcome to connect with their prior knowledge and personal interests. For Samy, this meant she was able to bring her interests in ‘treasures’ and ‘vintage’ in this case paper into the social studies classroom. She was also able to use digital technologies such as Google Drawing and the Google search engine to create her assignment. Again, a salient theme illustrated here is effectively seeking information using internet sources. Another theme illustrated is using internet tools and literacies, including as a designer, to multimodally represent and communicate their understandings gained from their inquiry tasks. Also, here Samy is accessing her *known*, interstitial learning experiences. Thus, Miss Green’s intentional pedagogical moves allowed the more proficient ELL students to tap into their interstitial technological knowledge (such as searching for “treasures” digitally), which helped students to better understand the curriculum being taught: in this case, pillars of democracy. However, it wasn’t just the understandings but also the emotional message that also being communicated-the learner’s ability to develop this type of literacy was practiced in her

lifeworlds out-of-school. Again, this is also one way that a learner mobilized her *known* across learning spaces.

In Table 5.2, I summarize the knowledge processes/activity types that the students activated when engaging in this particular task (addressing research question 1):

**Table 5.2:** *World War 2 Effects Knowledge Processes Summary*

Context	Illustrative Example/Learning Tasks (learning intention)	Data	Knowledge Processes
<ul style="list-style-type: none"> <li>• School District Vision</li> <li>• School Vision</li> <li>• Teacher Philosophies</li> <li>• Students' experiences outside of the classroom (e.g., searching information on Google, stories told from grandparents)</li> </ul>	<p><b>World War 2 Effects</b> -apply the pillars of democracy to a real-life event (e.g., current event)</p>	<p>Visual and Linguistic Artifact Interview Data</p>	<ul style="list-style-type: none"> <li>• Applying Creatively-- applying the pillar of democracy and article from the internet to create a visual representation.</li> <li>• Experiencing the New--scaffolding the concept of pillars of democracy in mini-lesson.</li> <li>• Experiencing the Known-- inviting students to bring in their own experiences and understandings to support the learning of the concept of the pillars of democracy.</li> <li>• Applying Appropriately-- applying the curricular concept of the pillars of democracy to an appropriate news article.</li> <li>• Analyzing Critically-- explaining why the news article chosen provided the evidence of a particular pillar of democracy.</li> </ul>

As represented in this table and discussed above, *experiencing the known* and *applying creatively* were the most prevalent activity types in the World War 2 Effects project. However, I also noted that Samy activated other knowledge processes not just the most prevalent ones. What is special about this particular illustrative example is that these knowledge processes invited students like

Samy to transfer their lifeworld experiences (their *known*) from other learning spaces into the classroom (addressing research question 2). In this case, the *known* (e.g., stories grandparents tell) were moved from a home (interstitial) learning space into the school-sanctioned learning space.

When looking further into the *known* in this classroom, it is apparent that one of these *known* included students' *technological knowledge* as they were able to use internet tools, such as Google search and Google drawings, to help with their meaning-making (Mills, 2010). Students in this classroom used Google regularly in their interstitial learning spaces; these digital tools and *known* were transferred from interstitial learning spaces to this school-sanctioned learning space. Like her classmates, Samy used the internet to aid in her meaning-making process. She recognized that the narrative she was retelling was an old one, and she wanted her assignment to reflect this. By using Google to find "old vintage paper," she was attempting to make her Google Drawings image appear old. Another notable *known* was content knowledge wherein students like Samy used the dictionary to look up words. In this case, Samy had used the dictionary to find the word "vintage," which she then used as a Google search term. In the following section of this chapter, I will discuss the illustrative example, Math Art. This illustrative example, Math Art, furthers our understanding of the knowledge processes used by students in this classroom.

#### **5.4 Math Art: Taking an Abstract Concept and Making it Concrete**

*As noted in my researcher journal, it was March 18<sup>th</sup>. I have now been in the research site for over two months. The previous week when I had spoken with teachers, I was informed that part of the class would be on a field trip to the nature conservation park. The teachers had already divided all the grade 6 classes into groups so some of the kids stayed behind at the*

*school with teachers that were not their homeroom teacher. After some thought, I decided to stay at the school and spend time with those students that would be staying rather than going on the field trip as the majority of my research participants would be at the school that day. As the reader will note, the students had some interesting pseudonyms. The students chose their own pseudonym. In their initial researcher journal and letters of introduction, the students were asked to explain their name choices. Many of the names were chosen because of their interests or personal experiences (e.g., favourite TV show, favourite snack, nicknames). To maintain the anonymity of my research participants, I have only explained some of the pseudonyms, if it does not reveal any identifying information.*

*I spent the first part of my observation time, sitting with rainbow unicorn, Chocolate chip cookie and PeaceMaker in Miss Green's classroom as they completed their assignments. Rainbow unicorn and Chocolate chip cookie were sending emails back and forth to each other. Rainbow unicorn would first write an email on the laptop to Chocolate chip cookie and then verbally tell her to check her email. Chocolate chip cookie would email back on her iPod. Simultaneously Chocolate chip cookie and PeaceMaker were messaging each other on their iPods using iMessage. The girls' message content consisted of messages such as "I am stupid" and then an attached screencapture or picture (e.g., a selfie.).*

*Later in the morning while I was sitting with duck, Anabel interrupted to ask me what "9 plus 10" was. Without hesitation, I told her the answer was 19 which led to a fit of giggles from Anabel and her peers. The youth informed me that that it was a Vine (a short video clip online) they were speaking about. In this Vine, a boy was asked the exact same question but instead of providing the correct answer of 19, he informed the person taking the video the answer was 21.*

*I continued my conversation with duck but once again I was interrupted, this time by PeaceMaker who informed me that she had a pain on her right side and she had told Chocolate chip cookie this. Chocolate chip cookie had googled Wikipedia and after reading and conferring with Wikipedia she determined that PeaceMaker had an appendix issue.*

*Finally, I moved to the back of the room and sat with Babycupcake101, who was eager to tell me about her Math Art project.*

This vignette, derived from my field observation notes and researcher journal, provides further context for this technology-enhanced classroom (see Figure 4.1) and for the next illustrative example, Math Art. Many of the interactions and discussions in this vignette occurred regularly during my field observation. This vignette also helps address research question 2, in particular how students are mobilizing their *known* between and across learning spaces.

First, from the vignette, it is apparent that students used different digital technologies to communicate with each other. As mentioned at the beginning of this dissertation, research has documented how K-12 youth use digital technologies in various interstitial learning spaces (e.g., Black, 2008; Black & Reich, 2012; Black, et al., 2017; boyd, 2014; Burke, 2013; Dovchin et al., 2018; Ito et al, 2013; Jenkins et al, 2016; Lange, 2014; Lam, 2009; Lam & Smirnov, 2017; Lam & Warriner, 2012; Marsh, 2010; Yi, 2009). Such was the case in this technology-enhanced classroom. For example, my vignette describes how students such as rainbow unicorn and Chocolate chip cookie used iPods to send text messages to each other. They also used email to communicate messages, whether emailing on a laptop computer or on an iPod.

Second, students in this classroom watched Vine videos. These Vine videos are part of the communal shared memories as well as the *known* these students have acquired in their interstitial learning spaces (Wong, 2019). During my student focus group interviews, I

discovered that most of the students had watched the Vine video Anabel referred to and many similar videos. However, I was not familiar with this particular video. Therefore, when Anabel asked me the question, “9 plus 10,” it was not a part of my memories or *known*. Instead, I gave her the answer from my own *known*, most likely referring back to my own learning experiences in a math classroom where I learned that 9 plus 10 was 19. I activated the knowledge process *apply appropriately* where students (or myself) would be applying mathematical knowledge of addition to a problem (9 plus 10). However, the resulting exchange between me and the students highlights the differences in our generational experiences and our individual *known*.

From my research I have learned that in order for educators to understand their students, they also need to first consider and then understand their students’ digital experiences (part of their *known*), which include watching Vines. Since our experiences as educators may differ significantly from those of our students, this study suggests that for teachers to effectively plan tasks for their students, they need to gain a better understanding of students’ background knowledge, which includes their digital experiences. Having a better understanding of their students’ experiences and an openness to learn about these experiences, allows the potential for teachers to invite these experiences into the classroom to aid in meaning-making.

Third, students in the classroom used Wikipedia to find information. Again, this theme of effectively seeking information using internet sources. If students, for example Chocolate chip cookie, were unclear about a topic or needed further clarification, they often visited Wikipedia to learn more. By drawing on their *known*, such as using Wikipedia to find information (a common practice done in their interstitial learning spaces), students are showing that their *known* are and can be accessible in various learning spaces. Although students might be asked to complete school-sanctioned tasks, the reality is that these same students may draw on their *known* from a

variety of learning spaces, not necessarily those *known* acquired in a school-sanctioned learning space. I discuss this notion further when exploring the illustrative example, Silly Putty.

In terms of student designed tasks, the vignette above highlights how the activity types activated and selected by students invited opportunities for students to bring their own experiences and knowledge from one learning space into another learning space (*experiencing the known*) and apply these experiences and knowledge to solve problems (*applying appropriately*). For example, students used Wikipedia to find information about pain on the right side of the body and what the potential diagnosis was. When students bring their knowledge and experiences from other learning spaces, this is significant for the learning process in a school-sanctioned space. As I discussed previously, digital technologies may and can provide the affordances for this to occur and for boundaries to be blurred between learning spaces, as students commonly use Wikipedia, as a site of learning at home and at school.

Math Art was a project which asked students to take an abstract mathematical concept and make it concrete: specifically, students took an abstract algebraic equation and represented their understanding of it using art. With this particular task the knowledge processes activated by students such as Babycupcake101, suggests that with Enya Turnbull's task design she targeted specific knowledge processes, such as *applying creatively*. This illustrative example described next emphasizes the significance of the teacher role, as the ways students expressed meaning in school-sanctioned learning spaces can often be directly linked to how a teacher designed a task and what knowledge processes they are called upon to employ. Also, the salient themes highlighted in this illustrative example include applying mathematical concepts to complete assignments and using multimodal representations to communicate understandings, which is a theme that was identified in many of the illustrative examples including Math Building Project

and World War 2 Effects that I discussed earlier. These salient themes illustrate some of the ways that the *known* have been mobilized across learning spaces (research question 2). Finally, I will discuss the *known*, as it is an important construct especially when providing a comprehensive answer to research question 2.

In the previous chapter, Babycupcake101 was introduced as one of the focal participants in this study. Belonging to the group of students I loosely labeled the “techno-kids,” I also previously described Babycupcake101 as a “YouTuber.” I focus here on how Babycupcake101 took a mathematical equation and created an art piece. Using excerpts of her interview and visual data, I explore Babycupcake101’s Math Art project. Figure 5.13 shows a photograph of her work.

**Figure 5.13:** *Math Art*



When I asked Babycupcake101 to tell me more about her pattern, she indicated that Enya Turnbull's math assignment was "to represent a pattern from what we were doing with  $x$  and  $y$ ." In other words, the assignment task was to take something abstract and make it concrete. Before this task, Enya Turnbull had engaged in a number of mini-lessons that focused on pre-teaching the necessary knowledge to do the assignment. Many of these mini-lessons incorporated didactic pedagogy, whereby Enya Turnbull employed knowledge processes such as *experiencing the new* to explicitly teach new information: for example, what is  $x$  and  $y$ , what is an equation. These lessons involved pre-teaching the vocabulary (equation,  $x$  and  $y$  variables)—that is, providing scaffolds for her learners.

For the actual assignment, my analysis of student activated knowledge processes, suggested that Enya Turnbull targeted different activity types. Most notable is how Enya Turnbull targeted the knowledge process of *conceptualising by naming* such as defining what is  $x$  and  $y$  in an art piece. She also encouraged the knowledge process of *applying creatively* by having her students apply their understanding of a math equation to an art piece. This, it appears, was a way of scaffolding an abstract concept and making it more meaningful and comprehensible to a student. It also illuminates the salient theme of using multimodal representations to communicate understandings. When applying this abstract notion of  $x$  and  $y$  to creating an art project, students were also required to use the knowledge process of *analyzing functionally*: reasoning and make logical connections between the art project and how that represents a mathematical formula. These activity types were significant because through them, Enya Turnbull attempted to make this mathematical concept comprehensible for her students. Algebraic equations are not easy for students to understand (see Walkoe, 2015); therefore, this teacher needed to explore different ways of teaching these types of equations. It is suggested that

Enya Turnbull made the tasks more tactile; by using different modes rather than the traditional pencil and paper activities, she helped her ELL students in particular.

During our conversation, Babycupcake101 explained her “art.” She told me “. . . [I started] like from the bottom . . . I put like these vines things like the . . . you know the specks on the leaves . . . these things yeah so there is nine of them here and here there are eleven and here there are thirteen and also I don’t have my math here but like my equation is two times plus three I think or plus two.” From Babycupcake101’s description, I noted the use of different modes to represent meaning, such as the math equation as “vines” on a leaf (Kress, 2000). Such visual representations are described by Kress and van Leeuwen (2006), who elaborate on the concept of the grammars of language and visual grammars in particular: “Our visual ‘grammar’ will describe the way in which depicted elements-people, places, and things-combine in visual ‘statements’ of greater or lesser complexity and extension” (p. 1). What I observed in this illustrative example is how Babycupcake101 took the depicted elements (vines, leaves, and stem) and combined them to create a visual statement that communicated her understandings of mathematical equation. By applying a mathematical equation to create an art piece, she activated the activity types of *applying creatively* as well as *conceptualizing by naming*, wherein Babycupcake101 named the “elements” of the equation: “. . . you know the specks on the leaves . . . these things yeah so there is nine of them here and here there are eleven and here there are thirteen.” Rather than giving Babycupcake101 a didactic learning experience (when a teacher transmits learning to student by directly teaching it), Enya Turnbull had her students engage in their own meaning-making about what an algebraic equation is through a visual/tactile experience.

Also during this same conversation with Babycupcake101, I learned that the modes she used for communicating this math equation were intentional: for example, “. . . the first leaves leaf has nine so its like one times three . . .” and “the actual equation has to do with the leaf.” When connecting her project to the multiliteracies literature (New London Group, 2000; Kalantzis & Cope, 2015), specifically addressing *analyzing* and *applying*, I find that Babycupcake101 creatively extended and applied her understanding of the mathematical equation by creating an art piece. However, she also made multimodal connections between visual and linguistic design (art and math) to express her understanding of this mathematical equation. Another way of viewing this connection is to use the notion of transduction, which Kress (1997) defines as a transition from one mode of representation to another. He argues that “the transduction across modes, encourages the synaesthetic potentials of the child in their transformative, creative actions” (p. 26). In this illustrative example, Babycupcake101 engaged in the transduction of modes when she translated an abstract mathematical equation into an art piece. Students consciously using synaesthesia (or transduction) between modes and senses is one of the hallmarks of good pedagogy, Stein (2008) asserts. Although I am unable to comment on whether or not transduction was consciously happening for Babycupcake101 and her fellow peers based on one illustrative example, it is suggested that Babycupcake101 was able to translate her abstract mathematical understandings into an art piece. Further, to create this math piece, Babycupcake101 needed to have some basic understanding of what an algebraic equation was. My analysis and discussions with Enya Turnbull show that this teacher’s intention with the task was for students to see that algebraic equations were not abstract but could be represented concretely.

In the final part of our conversation, I asked Babycupcake101 if she liked art. Babycupcake101 answer was “no I not really I suck at art so much.” She added, “math is sort of kinda of more my thing.” Babycupcake101 considers that one of her communicative repertoires is mathematical equations whereas creating art pieces is not. As I discuss later below, with this particular task, her teacher Enya Turnbull did not account for Babycupcake101’s preferred mode of representation, which was not art, into her task design. However, in many learning situations, students are at times required to work in modes that are not their preferred or strongest mode, for often the teacher’s intent is for these students to improve in an area and benefit from their attempts of viewing constructs through a variety of lenses. So therefore, unlike other tasks in this classroom, students arguably had more limited choices.

While algebraic equations are abstract and often difficult for students to understand (Walkoe, 2015), Enya Turnbull was trying to engage in authentic pedagogy by having her students express individual perspectives. She encouraged the knowledge processes of *applying creatively*; for example, the art pieces looked different depending on what the student chose to do. The knowledge process of *experiencing the new* was also encouraged since the task was hands-on. However, it appears that the modes students used were directly linked to how the teacher designed this task. As the teacher had directed the students to create an art project, there was no alternative way for Backcupcake101 to represent her understandings. When Enya Turnbull had her students take an algebraic equation and create an art piece that represented it, she was also having them use the activity types of *applying creatively* and *conceptualizing by naming*. Enya Turnbull also taught art to all the grade 6 classes during option time (non-core subject classes), thus providing students with opportunities to express themselves in different ways. This example shows how Enya Turnbull was encouraging the mobilizing of knowledge

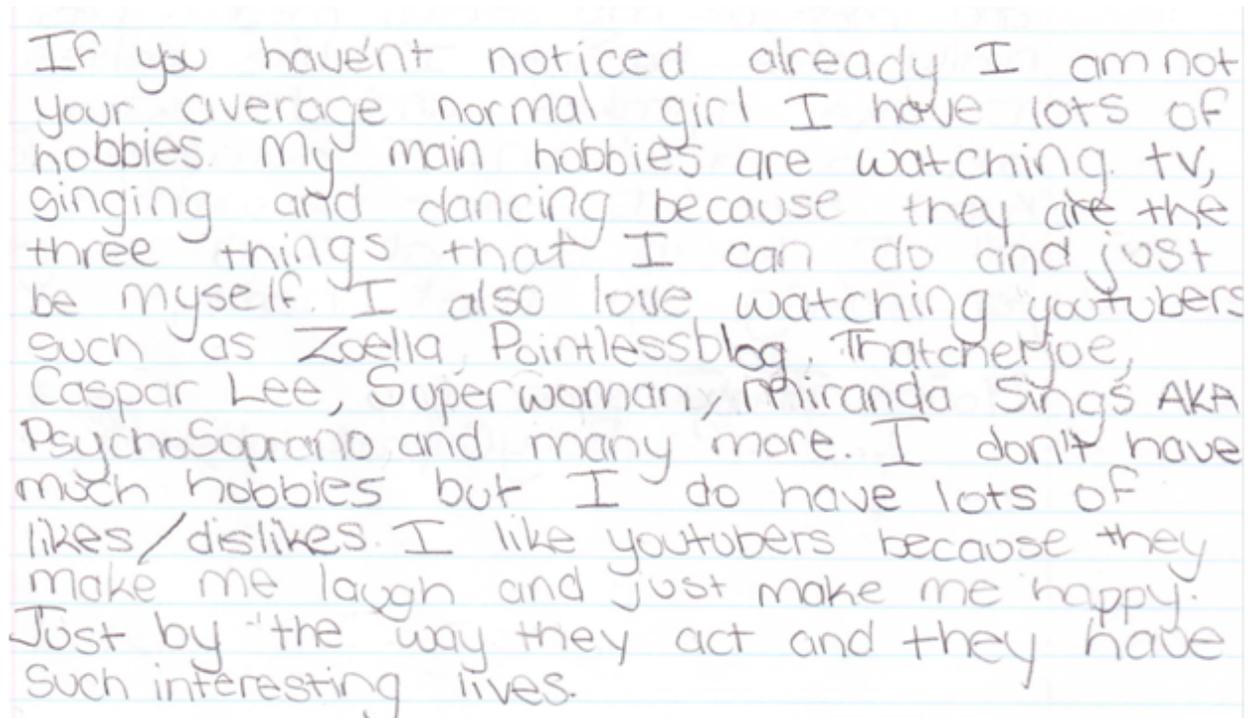
processes from one learning space to another. In Enya Turnbull's art classes, some of the students preferred using different non-linguistic modes, in particular more visual artistic modes, to engage in meaning-making. Therefore, Enya Turnbull incorporated cross curricular connections into her math class which she discussed in a conversation with me.

However, during our discussion, Babycupcake101 elaborated that she was aware she was not good at art. One of the challenges that the teachers in this school regularly faced was balancing the learning needs of their students and meeting curricular demands. In this classroom, many of the activities provided opportunities for students to choose how they represented their meaning-making, whereas other tasks did not always offer these choices. Providing choice is one way of meeting learners' needs in a classroom. When given a choice, students will select what will work for them, especially when students are at various levels. However, giving choices is not always possible or always a part of a teacher's task design. But it is clear from my analysis that the salient theme of using multimodal representations to communicate understandings was prevalent in this illustrative example and other illustrative examples in this study. It is suggested by my analysis that teachers incorporated opportunities for students to use multimodal representations to communicate their understandings, such as with Math Art. However, these opportunities to use multimodal representations to communicate understanding were not always ideal for some students such as Babycupcake101 who felt her communicative repertoire included mathematical equations but she was not able to express herself using her preferred mode. More specifically, with this task she focused on her audience: her teacher and what modes her teacher wanted her to use. Therefore, the teacher plays a key role in what modes are used, even if at times the ways students express meaning-making are not necessarily through choice.

As mentioned in Chapter 4, Babycupcake101's English language proficiency was advanced according to school and provincial assessment tools. She was an extremely articulate youth and a strong academic. What I learned from this illustrative example is that in this technology-enhanced classroom, students like Babycupcake101 who are proficient in English express themselves in different multimodal ways often due to how their teacher intentionally planned for this to occur. Enya Turnbull did this by targeting activity types that encouraged Babycupcake101 to articulate her understandings (e.g., *analyzing functionally*) in a visual mode. These advanced language learners, such as Babycupcake10, have the language ability to communicate their understandings clearly and concisely but are being asked to expand their modes of meaning-making to expand their literacies.

In order to provide a comprehensive response to research question 2, it is critical that I present a discussion about Babycupcake101's *known* to illustrate what my participants mobilized across learning spaces in this school-sanctioned learning space. In the previous chapter, I elaborated on what Babycupcake101 did in her spare time which differs significantly from this school-sanctioned activity, Math Art. Like many of her peers' research journal entries, Babycupcake101's entries usually focused on the activities occurring outside of the classroom: in particular, her love of YouTubers and pop culture (e.g., famous musicians). Although she said that "math is sort of kinda of more my thing," she very rarely talked about math (or school-related topics) in her researcher journal or during our discussions unless she was prompted.

**Figure 5.14:** *Babycupcake101 Introduction Letter Excerpt*

A photograph of a handwritten letter excerpt on lined paper. The text is written in blue ink and reads: "IF you haven't noticed already I am not your average normal girl I have lots of hobbies. My main hobbies are watching tv, singing and dancing because they are the three things that I can do and just be myself. I also love watching youtubers such as Zoella, Pointlessblog, Thatcherjoe, Caspar Lee, Superwoman, Miranda Sings AKA PsychoSoprano and many more. I don't have much hobbies but I do have lots of likes/dislikes. I like youtubers because they make me laugh and just make me happy. Just by the way they act and they have such interesting lives." The handwriting is cursive and somewhat informal, with some capitalization and punctuation errors.

In the data sample above (see Figure 5.14), Babycupcake101 elaborates on how much she loved watching YouTubers, listing some of her favourite channels and vlogs (e.g., Zoella and Superwoman). Babycupcake101 contradicts herself when she writes that she has lots of hobbies but then says, “don’t have much.” However, what is apparent from her discussion is that YouTubers make her happy due to their interesting lives. It is clear from my conversations with her that digital learning spaces such as YouTube played a significant role in Babycupcake101’s life; YouTube interactions being a part of her *known* (her interstitial learning experiences). Lange (2019) discusses how YouTube is a mediated, social place where people forge social ties. People from all walks of life converge in this digital learning space to share videos on various topics and build community. In her previous study, Lange (2014) also discussed kids and adolescents engaged with YouTube in various ways. Some individuals like Babycupcake101 went on

YouTube to view videos, while others created material (e.g., vlogs). Reflecting previous research (e.g., Abrams, 2016; Black, 2008; Black & Reich, 2012; boyd, 2014; Lam, 2009; Yi, 2009), these digital learning spaces were a crucial part of these youths' social lives. Although YouTube is only one interstitial learning space, Babycupcake101's experiences with YouTube reflect those of many other students, both in this technology-enhanced classroom and in scholarship. However, these interstitial learning experiences also differ significantly from tasks like Math Art, which could be teacher-directed and therefore might lack student agency.

As it is suggested by my findings discussion, teachers need to gain a deeper understanding of what tasks students engage in outside of the classroom, in particular their students' *known*. This understanding is crucial when drawing on [recruiting and mobilizing] background knowledge during tasks by targeting knowledge processes such as *experiencing the known*. In seminal texts, such as the edited book by Hull and Schultz (2002), the message of bridging out-of-school literacies with classroom practice is still relevant today. In this book, researchers highlight that what happened in school differed from home and how critical it is for educators to bridge these learning spaces. Here, this discussion complements the New London Group's (1996) message of what schools can do which is meshing curriculum and the subjectivities (which includes the *known*) and therefore using these subjectivities as resources for learning (p. 72). For example, Skilton-Sylvester's (2002) discussion of a Cambodian girl's writing journey asserts how a struggling writer in school could actually be a flourishing writer in out-of-school contexts. Skilton-Sylvester argues that in those contexts, her participant Nan was able to compose "much clearer stories as time went on when she controlled the topic and the genre" (p. 71). If Nan's teacher had been aware of this, she might have been able to incorporate

opportunities for Nan to be successful with her writing by targeting different knowledge processes in her task design.

Today, the affordances of technology provide students with a multitude of different informal learning experiences when compared to those of past generations; this affordance of technology is potentially a tool for students to use to mobilize their various *known* into the classroom. Students like Babycupcake101 are now YouTubers (Lange, 2014); they are also fanfiction writers (Black, 2008) and interact in a variety of interstitial learning spaces (e.g., Minecraft, World of Warcraft) (see Abrams, 2016; Nardi, 2019). One salient theme from the literature exploring students in interstitial learning spaces is that these spaces provide students with agency (Vandergriff, 2016), putting students in charge of the learning and how particular experiences are designed (seen in the upcoming illustrative example Rap Battles [Wong, 2019]). In the classroom context surrounding the task discussed above, the modes and the ways students are expected to express their meaning-making are not necessarily every students' preferred choice, whereas Vandergriff (2016) discusses how agency leads to greater success in language-learning. In addition, in some classrooms there might be a lack of learner agency due to institutional expectations (e.g., the curriculum); however, teachers can change this.

My experiences as an educator, teacher educator, and researcher have highlighted the need for teachers to better understand the experiences (the *known*) their students have in their interstitial learning spaces and to see opportunities to incorporate [mesh] these experiences into task design [and with curriculum], or to invite their students to discuss alternative representations of their knowledge. The call from the New London Group (1996) not to “ignore or erase” but rather to “recruit” the different subjectivities into the classroom is critical (p. 72). This understanding is especially important when we consider ELL students who come with

experiences [potential resources for learning] that might differ from those of their peers. Examples such as Babycupcake101’s love of YouTube is important because as I will discuss in the next illustrative example, searching for information effectively using internet sources and seeking internet “experts” outside of the classroom are two of the *known*, students mobilize into this technology-enhanced classroom. From my experiences I would strongly recommend that incorporating these experiences into task design not only helps promote student engagement but also bridges school and lifeworld contexts: the benefits of which have also been documented by scholars (see García-Sánchez and Orellana, 2019).

Below is a summary of the knowledge processes activated by students due to Enya Turnbull’s task design for Math Art, which answers research question 1. In Table 5.3, the students activated a variety of knowledge processes as a result of Enya Turnbull’s task design, including *experiencing the new*, *conceptualizing by naming*, *applying creatively* and *analyzing functionally* to help students take an abstract mathematical concept and make it concrete.

**Table 5.3:** *Math Art Knowledge Processes Summary*

Context	Illustrative Example/Learning Tasks (learning intention)	Data	Knowledge Processes
<ul style="list-style-type: none"> <li>• School District Vision</li> <li>• School Vision</li> <li>• Teacher Philosophies</li> </ul>	<p><b>Math Art</b> -take an abstract mathematical concept and make it concrete</p>	<p>Visual Artifact Interview Data</p>	<ul style="list-style-type: none"> <li>• Experiencing the New-- explicitly pre-teaching new information (x and y variables, vocabulary).</li> <li>• Conceptualizing by Naming—naming the elements of the equation on their art project</li> <li>• Applying Creatively— applying a mathematical equation to an art piece.</li> </ul>

			<ul style="list-style-type: none"> <li>Analyzing Functionally--reasoning and making logical connections between art and math equation.</li> </ul>
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In this illustrative example, the salient themes highlighted were applying mathematical concepts to complete assignments and using multimodal representations to communicate understandings which addresses the *known* that was mobilized from one learning space to the next (addressing research question 2).

### 5.5 Silly Putty: YouTube and the Known

*On an early February afternoon, February 10<sup>th</sup> to be exact, the students were gathered in Miss Green’s room for their business elective class. Although this was in the initial stages of my data collection period, I was already familiar with many of the routines in this class. The grade 6 students from all of the classes had daily option blocks. There were many option choices including Foods, Construction, Photography, Robotics, Pottery and Digital Literacy. All students were required to take one Physical Education class yearly. The school ran in a semester system with regards to the options. During my time at the school, the students changed their options once and this occurred in early March.*

*Today when I entered the classroom after visiting the Pottery option class, I found the groups hard at work on their business project. Each group of students were required to create a product, advertise it and sell it. As I entered the classroom, Eddy Teddy, rainbow unicorn and Starfire eagerly invited me to join their group. It was during this conversation that I was introduced to Silly Putty.*

The passage above is from my researcher journal and field notes. Students in this technology-enhanced classroom enjoyed their option classes which, as I mentioned earlier, happened daily. In the next section of this chapter, I present excerpts of interview data, visual artifacts, and email transcripts that demonstrated students were familiar with the appropriate registers (that is, had the communicative repertoires) to use in a variety of social contexts. Students in this classroom knew what register to use, whether in the classroom or emailing a friend.

This illustrative example, Silly Putty, addresses both research questions. I continue to explore the knowledge processes used by students, as afforded by to their teacher's task design (addressing research question 1). However, I also further show that students in this technology-enhanced classroom effectively sought online (unknown) experts to learn "How to" (salient theme and addresses research question 2). As discussed earlier in this chapter with the illustrative examples Math Art and World War 2 Effects, students accessed their *known* from one learning space and moved their knowledge and skills into another learning space. For example, students used Wikipedia, an interstitial learning space, to search for information. In another learning space, they activated the knowledge processes of *experiencing the known* and *applying creatively* to answer questions, with seeking information using internet sources such as Wikipedia being a part of their *known*. The example discussed here shows the mobilization of the *known* from an interstitial learning space to another interstitial learning space. However, as I will discuss in this Silly Putty illustrative example, students could potentially access their *known* to support learning in a school-sanctioned learning space. Two additional salient themes discussed in this illustrative example include applying a range of multimodal communicative repertoires (digital and non-digital) and effectively seeking information from family experts to complete school-sanctioned

assignments, which addresses some of the ways that the *known* was mobilized (research question 2).

After a conversation with Miss Green, I was presented with the following assignment details via email that students were given in class prior to starting this project, Silly Putty (see Figures 5.15, 5.16 and 5.17):

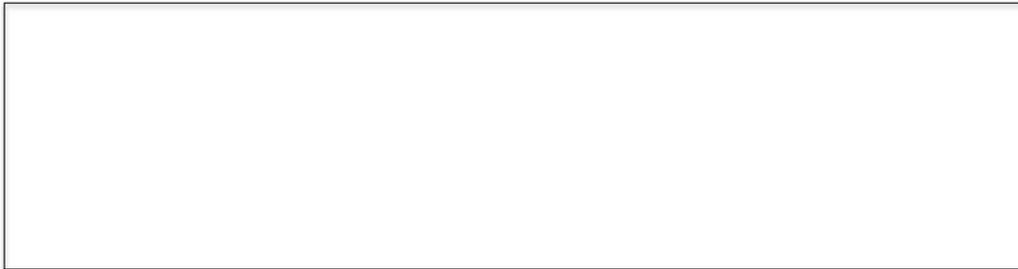
**Figure 5.15: Instructions (Part 1)**

**Gr. 6 Entrepreneurship – Our Business Plan**

Group members (3 – 5 students): \_\_\_\_\_

1. Business name: \_\_\_\_\_

2. Business logo (make sure it "shows" what kind of business it is):



3. What does our business **sell** or **do**?

4. Who will our customers be?

5. How much will we need for **start-up costs**? What **materials** do you need to start your business? Where should Ms. Green buy these materials?



In this assignment, Miss Green expected her students to come up with a product, market it, and then sell it. She provided the students with clear guidelines about the assignment expectations, including instructions to create a logo, have a name for your business, and create an information poster and website. She also wanted the students to reflect on how they were working together as a group (see Figure 5.16) and how they were performing as a business (e.g., How can we increase sales?). As with the illustrative example Math Building Project, the teacher provided students with opportunities to apply curricular concepts to a specific context (*applying creatively*). However, Miss Green also provided opportunities for *experiencing* by targeting such knowledge processes as *experiencing the new*. Creating a business product and selling it was not a foreign concept to these students; however, many of them had never done it before. Therefore, before this assignment, Miss Green explained the concept of creating a business product through a variety of mini-lessons and pre-assignments. Taking business courses herself at the time, this teacher was eager to incorporate her learning into her class. Not only was she the expert guiding the learning, she was also a mentor for students exploring a variety of business ideas (e.g., what product to produce based on the audience).

Miss Green encouraged her students to engage in *conceptualizing by naming*. She scaffolded the learning by teaching students vocabulary such as ‘product’, ‘selling’, ‘marketing’, and ‘mark up’ (note how she bolded key vocabulary words as shown in Figures 5.15 and 5.16). These were “business” words she had explicitly taught (e.g., explained the meaning of each vocabulary word, modelling the vocabulary in a specific context) to her class before starting the project, and she wanted her students to know these were important to the assignment (I later elaborate on how students became aware of the appropriate registers to use in a business context). Also, when referring to the language assessment tool/curriculum for ELL students used

by the school district (see Alberta Education, 2011b), at the intermediate and advance language proficiency levels, it is noted that students at a Grade 6 level are working on building their academic language and subject-specific vocabulary (e.g., such as a business vocabulary). It is suggested that when Miss Green had her students' engaging in *conceptualizing by naming*, she was addressing their language proficiency needs as per the curricular expectations laid out by the provincial Ministry of Education. Miss Green also provided clear guiding questions in her assignment, such as—What does your business sell or do? What prices will you charge? These questions appeared to help to scaffold and support students' learning and also kept students on track as they figured out their business products and plans. By scaffolding the language and providing guiding questions, Miss Green encouraged her learners to gain explicit information and also engage in guided practice (The New London Group, 2000).

There were no beginner language learners in this technology-enhanced classroom; however, explicit language instruction and guided practice were intended to benefit ELL students, especially at the intermediate to advance language proficiency level (Singer & Fenner, 2020), the level of the students in this classroom. It is suggested by my data analysis that Miss Green wanted her students to be consciously aware of what was happening and what they were learning.

Cope and Kalantzis (2015) also discuss how “one key pedagogical weaving is between school learning and the practical out-of-school experiences of learners . . . cultural weavings” (p. 4). Miss Green's assignment was “open-ended”—the business product could be whatever the students wanted to create—with many opportunities for students to activate *experiencing the known*. In this classroom, as I discuss below, students engaged in this activity type as they

brought in their experiences from outside of the classroom to support the development of this business product.

In the entrepreneurship assignment (see Figure 5.15 and 5.16), Miss Green targeted the activity type *analyzing critically*, so that the students doing this project were required to critically evaluate other people's perspectives to create a product and market it. Students also activated the activity type *applying creatively*, using their understanding of a business to create a product and market it to a particular audience. By targeting these knowledge processes, Miss Green was also inviting students to engage in reflexive pedagogy (Cope & Kalantzis, 2015) as these students were engaged in hands-on activities, analyzing the interests of people and transferring their business knowledge into an appropriate context.

From my observations, teachers in this classroom seemed to have followed the principal's suggestions to engage in inquiry-based task design: whether during inquiry-based learning professional learning or during professional conversations. These teachers were also readily thinking about task design in terms of the "essential questions" and "bigger ideas" (Wiggins & McTighe, 2005), which I witnessed during team meetings and professional learning meetings. These teachers were intentional about connecting all disciplines when they planned. Inquiry-based learning in this classroom started with a provocation (see Clifford & Marinucci, 2008) and students exploring their own questions. Largely because of Principal Ispirazione, this approach to learning and thinking was a part of everyday learning at Cypress Hills School.

In the next exchange, I introduce the origins of Silly Putty through a discussion taking place during that early February visit described earlier. Eddy Teddy, Rainbow Unicorn and Starfire were all in the same group. When I entered the classroom, they were situated at a dark grey cloud shaped table close to the door on the left-hand side of the classroom. Eddy Teddy

invited me to join them. The table was filled with containers and materials to create their product, Silly Putty. When I joined them, the girls were hard at work making Silly Putty (see Figure 5.18 below). I decided to seek some clarification regarding the origins of their business venture. Eddy Teddy, always keen to answer, explained, “. . . cuz one night I was on this on a like youtube and it was like when (Miss Green) told us about business and I was on this channel thing and it was it was like talking about how you can make your own silly putty so I got an idea right there and I was like okay let’s make silly putty because it’s like five dollars in stores and for only a little bit so like why can’t we get so much for only like cheap.” In her explanation, Eddy Teddy used YouTube-specific vocabulary like “channel,” demonstrating her familiarity with this particular learning space and the register used to communicate (navigating YouTube was part of her communicative repertoire [Rymes, 2012]). Again, this salient theme of seeking information using internet sources is illuminated. I then asked if Eddy Teddy could send me the YouTube channel where she found this Silly Putty idea. Starfire agreed to do this, but indicated that “there is like so many.” Eddy Teddy then explained, “it’s called a howcast.” But again I insisted, “okay can you send me the howcast that you found.” Starfire responded by providing me with the search terms to find it on YouTube, “how to how to make silly putty.” I again asked if it was possible for the girls to share this YouTube video with me since it would not be the “. . . same one that gave you this inspiration” otherwise. Finally, Eddy Teddy wrote the search terms for the Howcast on a piece of paper for me (see Figure 5.19). When Eddy Teddy gave me the exact search terms to type to find the “Howcast,” I learned that these “search terms” were a part of Eddy Teddy’s (and Starfire’s) technological knowledge, their *known*. She was familiar with how to navigate the search functions in YouTube to obtain the information she needed and the YouTube channels she wanted to access.

From this conversation in Miss Green's business class, I learned that the idea for Silly Putty came from a YouTube "Howcast." Searching for information on YouTube was a part of Eddy Teddy's *known*, and this learning space was a familiar one. However, the significance of this instance is that it further addresses research question 2: in this classroom, students like Eddy Teddy mobilized her *known* (effectively seeking information using internet sources, in this case, YouTube) from one learning space to another. After Miss Green assigned the learning task of creating a product and selling it, Eddy Teddy activated the activity types *experiencing the known* and *applying appropriately* and used YouTube to find a business product idea for her group. She drew on technological knowledge acquired in her interstitial learning spaces to support a learning task in a school-sanctioned learning space. In this technology-enhanced classroom, students are socialized into a practice whereby, when completing school-sanctioned activities, they may use technological knowledge such as seeking videos on YouTube and using search terms to find information to help with the completion of these school-sanctioned tasks. Another salient theme is highlighted here, where students in this classroom were accessing expert informants on the internet outside of the classroom. What is important about this practice is that experts are not always in school-sanctioned learning spaces but can be found in a variety of other learning spaces, including YouTube, and that students are accessing these interstitial experts to support the learning in the classroom. Essentially, the teachers have given the students the option to deploy the technology expertise they have developed outside of the classroom to complete their school-sanctioned tasks.

**Figure 5.18:** *Making Silly Putty*



**Figure 5.19:** *Howcast Search Terms*

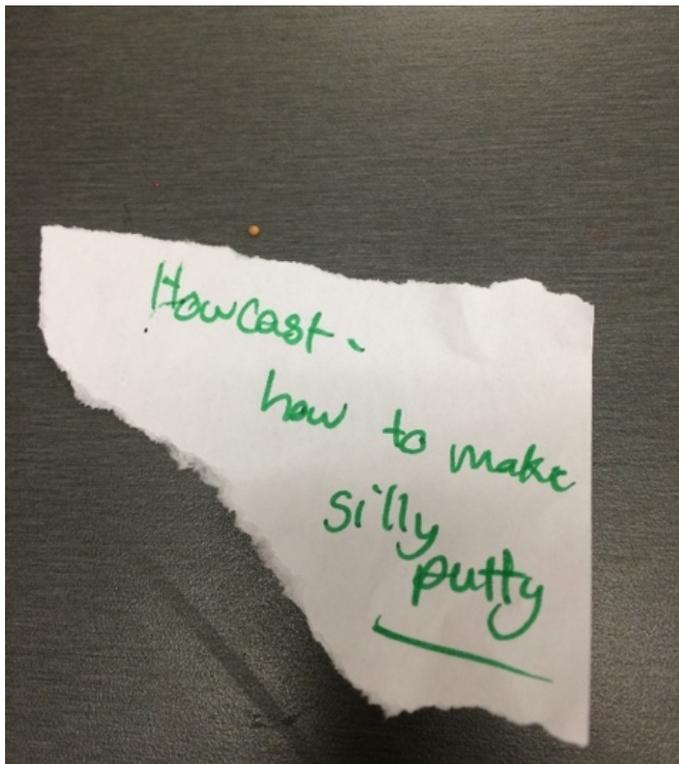


Figure 5.20: Goopy Nerds Advertisement

**Goopy Nerds = Silly Putty**

Surprise Putty & silly putty- comes with free containers  
Jumbo Pack - \$3.00  
medium Pack - \$2.00  
small Pack - \$1.50

Limited offers are for \$2 for any size

Glow in the dark-Jumbo Pack 3.50 medium Pack 2.50 small Pack 2.00

What is silly putty? silly putty is slime that does not stick. It comes in varieties of colours and you can have different coloured glitter for free. (The glitter is optional) You can also get all the colours in one so a rainbow. Its the same price as normal silly putty.

What is surprise putty? Surprise putty is like kinder surprise just instead of the chocolate we have slime

Normally in stores you pay 5 or 10 dollars for silly putty. We give you the best offers.

Receive a coupon for 50% off on a regular price for next purchase.



The advertisement includes three photographs: a glowing cyan putty shape on a black background, a green putty being poured from a clear plastic container, and a pink and purple putty being stretched. To the right is a circular logo with a blue background. Inside the logo is a cartoon character with glasses and a wide smile. Text next to the character reads "silly putty (none sticky slime)" and below the character is the name "Goopy Nerds".

Figure 5.20 shows a business advertisement that the girls created; one of the assignment requirements Miss Green gave her students (see Figure 5.16) was to create an information poster. This image is significant because of how the girls used a register appropriate for the purpose. Phrases such as “limited offers for \$2 for any size,” “it comes in a variety of colours and you can have a different coloured glitter for free,” and “receive a coupon for 50% off on a regular price for next purchase” demonstrate how the girls were familiar with the register appropriate in sales; this was part of the girls’ *known*. The girls also created a business slogan, “silly putty [none sticky slime]” and a company name “Goopy Nerds.” When considering the image from the

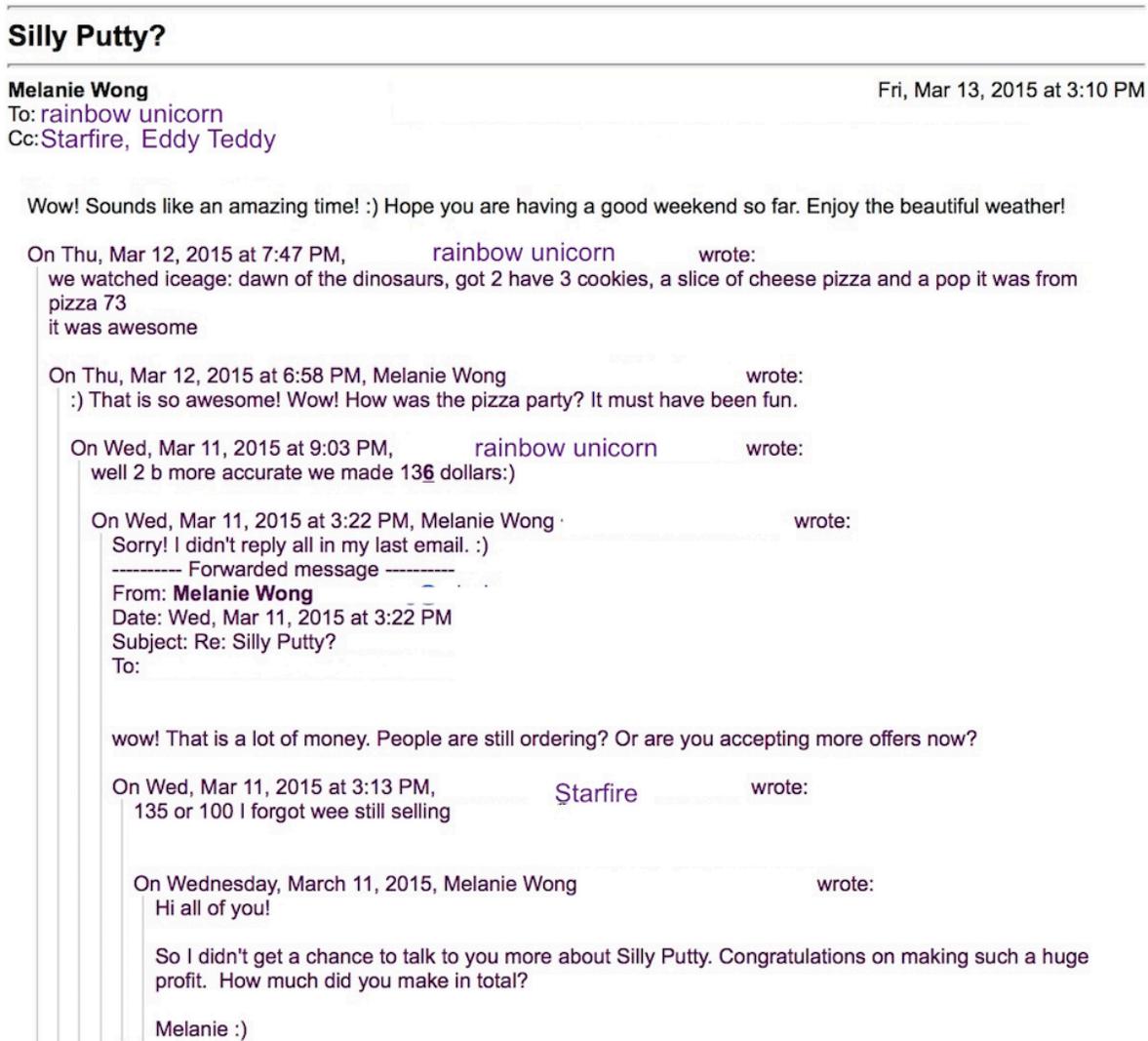
standpoint of its site of production (Rose, 2016), it was created digitally and used a combination of both text and images (found by using Google and searching for the coloured images of Silly Putty). The multi-coloured pictures of Silly Putty at the bottom draw the viewer's gaze downwards. As Kress & van Leeuwen (2007) note, "The [producer] uses the image to do something to the viewer. It . . . 'demands': the participant's gaze . . . demands something from the viewer . . ." p. 120). The "demand" from the viewer is to look at those coloured images of Silly Putty that they could purchase. In this example of visual data, I learned that a variety of digital modes (Kress, 2011) were used, both text and images, in this classroom to engage in meaning-making.

In a follow up conversation about the Silly Putty project, I asked the girls (Eddy Teddy, Starfire, and Rainbow Unicorn) to join me for a focus group interview in the conference room just beside the school's office. On my laptop, I showed the girls some of the data I had collected. One of the images was a photograph of a "planning sheet" they used to create the advertisement (Figure 5.20). I asked if the girls could elaborate more on the process through which they created the advertisement. Starfire explained that she had to redo her peer's work since it was not accurate, "not the actual prices." She also indicated how she felt it was important to include pictures of "slime" (or Silly Putty) since it resembled what the product was actually going to look like. We also discussed the creation of the logo: the girls used Google Drawing to create this image, and the idea originated from Eddy Teddy who "started drawing it." Further into the conversation, we talked about who apprenticed the girls, in particular Starfire, to write in the business register previously noted in the advertisement (Figure 5.20). Starfire indicated it was her dad. She further reflected on the role her father played in this process by saying that "he's good with ideas so I asked him." Her father's advice was to "be professional," and "before

people ask a question it should be answered already.” In this interstitial learning experience (at home), the activity type *experiencing the new* was activated. As the expert, Starfire’s father helped her to be consciously aware of what was important in business, but he also acted as a guide by explicitly teaching her what was important: for example, before people ask a question it should be answered already. In this way, Starfire was apprenticed into the business register that was crucial for her to know as a member of her business class. She activated the knowledge processes of *experiencing the known* and *applying appropriately* by taking knowledge (from home) and bringing it into a classroom to complete her business assignment (answering research question 2). Here, the salient theme of accessing family experts outside of the classroom is illuminated once again. This is similar to the illustrative example World War 2 Effects, where Samy took a story her grandfather told her from one learning space (her home) into another one (her social studies classroom).

By contrast, a different register is used in a follow-up email exchange between the girls and me (Figure 5.21):

Figure 5.21: Email Exchange (March 13<sup>th</sup>)



My initial email to the girls, captured at the bottom of this image/email thread, asks how much money they made selling Silly Putty. This initial exchange shows formality; I include a salutation and sign my name at the end. In response to my email, Starfire replied with no salutation and very informally, with incomplete sentences and spelling errors (e.g., “wee”). Following Starfire’s email, rainbow unicorn replied to the thread. Note the “Netlish” (Crystal, 2006) usage of “2” “b” and how rainbow unicorn bolded the number 6 to correct Starfire’s initial response about the amount of money they had made. Also note the emoticon usage, a smile

created using a colon and bracket. The register in this exchange is very different than the more formal one of the business advertisement (Figure 5.20). The different registers these girls were familiar with demonstrate their various communicative repertoires built from interactions with others (Rymes, 2016), which it is suggested are linked very much to the *known* that individuals carry from one learning space into another. As these students participated in many interstitial learning spaces, they often used “Netlish” (Crystal, 2006) or emoticons and a variety of communicative repertoires that were not necessarily those they used in school-sanctioned spaces.

Reflecting on this informal register indicates many affordances (Kress, 2011) when using both textual (Netlish) and visual (emoticons) modes. For example, messages are faster to type using the number 2 rather than typing the entire word “two”; emoticons can express a greater range of emotions than just text. These affordances have many potential implications for classroom practice, especially if teachers recognize that their students come with a variety of communicative repertoires. In the multiliteracies literature, the New London Group (2000) speaks about the concept of *available design*, which are the resources for design, and explain how schools are crucial sites in which discourses relate to each other:

Available designs also include another element: the linguistic and discursive experience of those involved in Designing, in which one moment of Designing is continuous with and a continuation of particular histories. We can refer to this as intertextual context (Fairclough, 1989), which links the text being designed to one or more series (‘chain’) of past text. (p. 21)

From the illustrative example of Silly Putty, we see important implications from gaining a better understanding of students’ various linguistic and discursive experiences, the subjectivities (their *known*). The *known*, resources for learning, which include linguistic and cultural diversity, that

students bring into the classroom can potentially support learning and make learning experiences richer. If teachers are thoughtful and intentional with their task designs, they can capitalize on what the students bring into the classroom. Scholars have already emphasized how the “skills” and lifeworld experiences students possess can be used as strengths that can be expanded in the classroom context and used to connect with different academic skills (see Cummins & Early, 2011; Cummins, et al., 2015; García-Sánchez & Orellana, 2019).

In the informal email exchange above, my participants knew it was appropriate to use an informal register, such as Netlish and emotions, when communicating with me (see Figure 5.21). This informal register, used in interstitial learning spaces outside of school, contrasts significantly from that of the advertisement (Figure 5.20), which used a more formal register appropriate for a school-sanctioned business class. This use of a formal business register, it is suggested, can be attributed to the knowledge processes Miss Green targeted. In the original assignment instructions, Miss Green (see Figure 5.16) suggested that students “check out some websites of businesses you know,” thus encouraging them to activate the activity types of *experiencing the known* and *applying appropriately*. She was therefore inviting the students to look at a familiar business website and apply what they saw to their own business website. She also explicitly taught the necessary business vocabulary (see Figure 5.15 and 5.16 where she bolded key vocabulary words) because she wanted her students to apply this language to their assignment. In so doing, Miss Green was encouraging her students to use the appropriate business register. Here, the salient theme of applying a range of multimodal communicative repertoires is illustrated. However, this illustrative example also shows that Starfire’s father supported Starfire’s learning where Starfire accessed a family expert outside of the classroom. Starfire’s father encouraged the knowledge process of *experiencing the new* when he, as the

business expert, explicitly taught Starfire what a business register was (“be professional” and “before people ask a question it should be answered already”).

### 5.5.1 Summarizing Silly Putty

In this illustrative example, I have discussed the mobilization of knowledge from one learning space to another as a means to answer research question 2. Three notable salient themes illuminated by this illustrative example are: effectively seeking information (including from online experts) using internet sources, applying a range of multimodal communicative repertoires (digital and non-digital) and accessing family experts outside of the classroom. All three of these themes help to better understand how the *known* was mobilized across learning spaces. Students, Eddy Teddy and Starfire, activated activity types, *experiencing the known* and *applying appropriately*, where they took their *known* they had learned in other learning spaces such as finding information on YouTube Howcasts (seeking information using internet sources), and applied them to the school-sanctioned task of creating a business project. Scholars (e.g., Erstad et al., 2016) have addressed the movement of people and ideas in the context of education/learning; specifically addressing how learning happens when people move in and out of sites of learning. As Erstad et al. (2016) argue, “connecting learning across school and out-of-school contexts is a growing concern in education research and practice” (p. 27). Like the participants in Dyson’s (2013) study, my participants have “recontextualized or borrowed voices, images, themes and intentions initially [associated] with other [practices] . . . The children found resources in varied aspects of local (if globally influenced) child cultures” (p. 164). Therefore, an implication of this illustrative example calls on educators to address multiple literacies, such as digital, and not focus solely on traditional print-based literacies (Dyson, 2004, 2013), since students are already carrying these multiple literacies in their *known*. This expanded focus starts with teachers getting

to know their students better, especially when it comes to understanding what their students do in interstitial learning spaces.

Table 5.4 summarizes the knowledge processes activated by students due to their teacher’s task design for this illustrative example (answering research question 1):

**Table 5.4:** *Silly Putty Knowledge Processes Summary*

Context	Illustrative Example/Learning Tasks (learning intention)	Data	Knowledge Processes
<ul style="list-style-type: none"> <li>• School District Vision</li> <li>• School Vision</li> <li>• Teacher Philosophies</li> <li>• Students’ experiences outside of the classroom (e.g., YouTube, obtaining advice from an expert innovative family member, reviewing business websites to investigate the genre)</li> </ul>	<p><b>Silly Putty</b> -create a product to sell</p>	<p>Interview Data Digital Artifacts (website, advertisements) Email Exchanges</p>	<ul style="list-style-type: none"> <li>• Experiencing the Known--accessing information on YouTube.</li> <li>• Applying Appropriately--applying the knowledge of accessing information from online experts on YouTube to use for a class project.</li> <li>• Apply Creatively--taking the understanding of business (buying, marketing and selling) and creating a product.</li> <li>• Experiencing the New--scaffolding via mini-lessons (e.g., what is a product, how to sell a product etc.) and from family expert human resources.</li> <li>• Conceptualizing by Naming--learning to use business vocabulary in a business context</li> <li>• Analyzing Critically--evaluating other people’s perspectives (e.g., what does the buyer want?)</li> </ul>

## 5.6 The Social Conventions of Rap Battles

I now discuss an illustrative example, Rap Battles, that takes place in the interstitial learning spaces of this technology-enhanced classroom. The purpose of this example is to highlight how different activities in the interstitial learning spaces are from those in school-sanctioned learning spaces. This case also illustrates the challenges and complexities of moving students' *known* across learning spaces.

*Another early February day. It was a mild winter one. The sun was out and the students had just completed another math class. They were now on the second floor of the building, in their homeroom classroom. The room faced the front of the building. Like the other rooms in the school, there were huge windows and light flooded the large space. In this period three class, some students sat on grey metal stools and others on blue plastic chairs. An unfamiliar face was at the front of the room this morning. It was not Frankie (their Homeroom/Science/Language Arts teacher) but a substitute teacher. The attendance had been taken, the students were now walking around the room gathering the materials that they needed to begin their work. Some students congregated in the front left corner of the room where their green duotangs were located in a clear plastic box. Others were in the hallway at their lockers gathering their materials. This morning I was situated at the middle back table, sitting on a metal stool beside PeaceMaker. She was catching me up on Snapchat and how her father would not allow her to have an account, although it really did not make a difference to her as she had her iPad.*

*The substitute teacher called the students to attention. She engaged the students in a brief discussion with regards to the parachute activity they would be undertaking during the remaining time in the classroom. Mint marker was not taking notes but he decided to throw his binder on the floor. Marty was throwing his parachute up in the air. Cheezychan had his*

*parachute wrapped around his head with the cup on his chin like a beard. He rubbed the cup and laughs. The discussion ended at 11:20 a.m. with the students separating into groups to complete the assignment. It was PeaceMaker and weareanonymous that first alerted me to the group of students congregating in the back corner of the classroom by the bookshelves. They informed me the students were engaging in a Rap Battle and mint marker had lost yet again.*

It is during this Science class that the illustrative example, Rap Battles, is introduced. This vignette was taken from my field notes, digital recordings of classroom activities, and researcher journal notes. The vignette gives a deeper understanding of what I noted regularly in this technology-enhanced classroom and also provides the context for when rap battles occurred: most often when the task assigned was not engaging. As has been suggested throughout this dissertation, it is important that educators know their learners and what activities these learners engage in outside of the classroom. Not being aware of students' activities outside of the classroom can have implications for student learning: for example, ineffective task design if teachers are not sufficiently accounting for background knowledge, or inability to meet the needs of their learners.

The day after my initial discovery of rap battles in the science classroom, I was sitting with cheezychan, Bolt, and Babycupcake101 during Miss Green's social studies class. It was about nine in the morning. Miss Green had taken the morning attendance and provided a brief explanation of the task. The students were now settled and working on another Pillars of Democracy mini-assignment. They had their laptops out and were using Google to find information related to the Pillars of Democracy. As with many of my informal talks with the students, the conversation naturally went off-topic, and unrelated, to the school-sanctioned activity. Today, the students were eager to tell me more about the origins of rap battles.

Cheezychan was using a laptop to show me where they found the original Rap Battle video. He verbalized what he was doing on the computer screen as he showed me, and he told me to “search on” YouTube. Cheezychan and Bolt confirmed that the original concept for rap battles came from the Disney movie *Let it Shine* (Hoens, 2012). The climatic rap battle scene from the movie has been posted on YouTube, and this was the video Cheezychan showed me. I asked the group to tell me more about the movie. Babycupcake101 retold the story for me, Bolt interjecting with specific details. The students were attracted to the underdog story of Cyrus, a preacher’s son, who lived a parallel life of being a preacher’s son during the day and working in a jazz club at night and writing raps. He fell in love with a pop star named Roxanne (Roxy). Through a variety of misunderstandings such as mistaken identity, Cyrus eventually came out on top; he won the rap battle and got the girl. Low (2011) described how many rappers take on a “rags to riches” narrative, especially those rappers who have made it and become successful by leaving their past “ghetto” lives (p. 37). This is an example of a success narrative, and the Disney movie mirrors this type of narrative when Cyrus wins the rap battle and gets the girl. My participants were attracted to this success narrative, most likely because it was a happy story and one in which the hero won the battle.

What I learned through my interviews and informal discussions with my participants was that these rap battles took place in various interstitial learning spaces, including the hallway, back of a classroom, and outside the school at lunch time. In later conversations with the classroom teachers, I discovered they were unaware of these rap battles although they expressed interest in learning more about these rap battles and the potential implications for their own classroom practice. One teacher, Enya Turnbull, wanted to do rap battles in the classroom after

learning about how engaged the students were. Like her colleagues, she wanted to make learning meaningful and incorporate students' outside of school activities when possible.

To participate in these rap battles, students needed to follow certain, distinct social conventions:

- No swearing.
- 2 or 3 rounds.
- Small Diss (hip hop language for disrespect).
- Audience determines the winner.
- Opponent loses when he/she does not have a response.
- Raps have to be spontaneous.

Through my various interviews with students, I noted that all who rapped or were bystanders were aware of these distinct social conventions and that they were followed by all participants, including rappers and audience members. Excerpts from interviews and rap battle data show how the notion of rap battles (now a part of the students' *known*)—an idea originating from YouTube—moved from this interstitial learning space into other interstitial learning spaces such as the back of a Science classroom and hallway (addressing research question 2).

In one of my first focus group interviews, Woverine, cheezychan, Blot, and Chocolatecherrypants were explaining the “rules” of rap battles. After cheezychan explained the first social convention, “no swearing,” Chocolatecherrypants said, “that’s technically it,” indicating that “no swearing” was perhaps the most important, significant, and only social convention. Later in our discussion, cheezychan and I had an exchange in which he elaborated on how grown-ups or teenagers often swore when they rapped, such as the well-known rapper

Eminem. Swearing in raps is allowed for “grown-ups and teenagers” but not for younger children.

In another focus group interview, I asked a group of students to discuss the social conventions of rap battles. Weareanonymous told me the social conventions of rap battles with Starfire and Crystal agreeing, clarifying, or adding when appropriate. Again, the social convention of no swearing was discussed initially, telling me that this rule was very important. However, contrasting with how cheezychan talked about this rule was that weareanonymous used the word “clean,” a reference to “non-foul language” (Urban Dictionary, 2017) to explain this social convention. Later in this conversation, I learned the second social convention was “two rounds.” The students at this point in the conversation were keen to offer a demo of a rap battles, but weareanonymous indicated that “we [needed] Eddy Teddy because she [was] like the master,” which told me that Eddy Teddy was recognized by her peers as being an expert. I asked for further details about how these rap battles worked. Weareanonymous replied, “one person starts it off with a small diss right they can’t be too offensive they can be offensive but not too offensive.” Another social convention that was introduced was that in order to win there needed to be peer affirmation (“like at the end all the judges and the people”). Near the end of our exchange, I asked if it was like the Disney movie *Let it Shine*, and weareanonymous affirmed this. But later, he indicated there were differences and that these rap battles were on a smaller scale in comparison to the movie. In other conversations, students mentioned two other key social conventions: how these raps needed to be spontaneous, and how the opponent loses when he/she does not have a response. The fact that participants in these rap battles were all aware of these distinct rules and social conventions indicates that these children had likely been socialized

into the rap battle literacy practice through various rap battles and discussion/negotiations of the rap battle rules.

Later in my focus group interview, which again included Starfire and weareanonymous, students retold a previous rap battle between Eddy Teddy and mint marker. Below (Extract 5.1) is the retold rap battle. We were still sitting in Enya Turnbull's classroom at the dark grey cloud-shaped tables.

**Extract 5.1:** *Rap Battle February 4, 2015 10:53 a.m.*

- 1 **Starfire:** oh oh oh I know something okay I betcha you can't own a cat  
2 because you're a fat rat m sure a: sure you're cool and all but I'm  
3 better then you. [a ]  
4 **weareanonymous:** [yeah] wait that's it  
5 **Melanie:** then what did you say back  
6 **weareanonymous:** that was Eddy Teddy and then [Eddy Teddy]  
7 **Starfire:** [Eddy Teddy]  
8 **weareanonymous:** Eddy Teddy like she's like m say what you want you try to be like  
9 Kanye last I check I was the new Busta Rymes and then she is like  
10 **Melanie:** [wow]  
11 **weareanonymous:** [then ] everybody went crazy

In lines 1 to 3, there was a small diss: "I betcha you can't own a cat because you're a fat rat m sure a sure you're cool and all but I'm better then you[a]," a diss being one of the social conventions of Rap Battles. Later in line 8 and 9, weareanonymous recalled Eddy Teddy's line, "say what you want you try to be like Kanye last I check I was the new Busta Rymes," which also contained a small diss, however, in this turn I noted a claiming of identity (or textual identity marker; Lam, 2004): "new Busta Rymes" and also references to mainstream "actual rappers" (e.g., Kanye and Busta Rymes). Finally in line 11, weareanonymous recalled how "then everyone went crazy," the final social convention of peer affirmation. Throughout this exchange, there was no swearing, again following one of the social conventions. In this retelling of a rap

battle, the social conventions were clearly followed with each rapper noting the rules of the game and following them.

The exchange below is an actual rap battle which took place in Enya Turnbull's room mid-morning. Eddy Teddy and mint marker were the key rappers involved in this segment (Extract 5.2). The audience consisted of Anabel, PeaceMaker, and me, sitting at one of the dark grey cloud-shaped tables. Eddy Teddy and mint marker were standing up in front of us, facing each other.

**Extract 5.2:** *Rap Battle February 4, 2015 11:30 a.m.*

- 1 **mint marker:** you're a pest and I'm the best
- 2 **Eddy Teddy:** really
- 3 **mint marker:** yeah
- 4 **Anabel:** haha
- 5 **Eddy Teddy:** okay m: I know I am awesome you don't have to tell me again at
- 6 least I don't go around saying do you have a pencil to lend
- 7 [ooooooooo]
- 8 **Peacemaker:** [awesome]
- 9 **mint marker:** [okay]

In the initial turn of this exchange, mint marker started off the rap battle with a small diss (“you're a pest and I'm the best”). Eddy Teddy followed in lines 5 and 6 with her own small diss (“I know I am awesome you don't have to tell me again at least I don't go around saying do you have a pencil to lend”). In line 8, Peacemaker provided the peer affirmation, and it was during this turn when it became clear that Eddy Teddy had won this particular rap battle. Alim's (2006) research finds there are several distinctive Hip Hop cultural modes of discourse and discursive practices (call and response, multilayered totalizing expression, signifyin and bustin [bussin], tonal semantics and poetics, narrative sequencing and flow, battlin and entering the cipher; p. 69). These distinctive discursive practices and cultural modes of discourse are what make Hip

Hop Nation Language (HHNL) unique. In Extract 5.1 and 5.2 above, students used HHNL discursive practices and cultural modes of discourse: the raps included rhyme (e.g., you're a pest and I'm the best) which Alim explains is an essential aspect of HHNL. These students also employed tonal semantics (e.g., Eddy Teddy drawing out certain sounds and emphasizing certain words) to convey meaning.

Prevalent in this interstitial learning space was how the participants followed clearly defined social conventions when engaging in the social practice of rap battles. Students needed to be socialized into these practices to gain communicative competence (Duff, 2007). The socialization process included all of the students watching the rap battle segment from the movie *Let it Shine* on YouTube. The students were familiar with this scene from the movie and what occurred between Cyrus (the main character) and his counterpart during the climatic movie rap battle. This socialization process also occurred over time as the rap battles had happened since the beginning of the school year. Through negotiation among the members of this friendship group, a shared understanding of the conventions of the literacy practice of the rap battle was created. The class rap battles happened regularly in various interstitial learning spaces in the school (e.g., hallways, back of the classroom). During the many rap battles that occurred in the school year, the social conventions became more routine and inherent to all members of this friendship group. All participating members were familiar with the rules even if they were just audience members, but some members were considered more expert than others. For example, it was clear from all my interview data and field observations that Eddy Teddy and mint marker were experts. The majority of the rap battle tales consisted of these two members of the class “rapping” it out and playing key roles.

Although some students did not actually “rap,” they played important roles in this social practice, and I would argue they were also experts. For example, students such as weareanonymous, cheezychan, Babycupcake101, and Starfire were all considered experts by their peers. They were extremely knowledgeable about the social conventions of rap battles, as noted in the interview data above. They also participated in crucial ways; Starfire was Eddy Teddy’s rap battle ghost writer. It became clear from my different interviews with students, and later my analysis, that students were socialized into this practice over time. It was through experiencing many different rap battles that the social conventions were established and learned. In this classroom, a novice both explicitly and implicitly learned over time the social conventions so that they could participate in the classroom rap battles.

These school rap battles mirrored on a smaller scale what occurred in the Hip Hop Nation Speech Community. Alim (2006) has discussed how the cultural modes of discourse were at their peak when engaging in a Cipa. A Cipa is defined as “an organic, highly charged, fluid circular arrangement of rhymerers wherein participants exchange verses” (Alim, 2009, p. 1). These instances are similar to a musical competition; rappers have alluded to this as being a training ground and a space where identities are shaped and contested. These school rap battles, although on a smaller scale, were reflective of a Cipa—occurring in an interstitial learning space where rappers such as Eddy Teddy and mint marker were able to practice rapping and form their identities as the class rappers. The participants determined competency in this rap battle community (Vicker, 2007) by deciding who had a better rap, and ultimately who won.

As reported in previous literature (e.g., Lange, 2014, 2019), these students also engaged with YouTube and they were active consumers of culture (Jenkins et al., 2016). The students in this technology-rich environment took an idea that originated from watching a YouTube video,

remixed it, and made it their own (Uribe-Jongbloed, 2013). They drew on their linguistic resources and prior knowledge (e.g., using a rap genre register such as small diss, clean) to engage in this social practice. That YouTube content played a critical role for this illustrative example, the salient theme where students sought information using internet sources —a further example of students in this technology-rich environment mobilizing knowledge from one learning space to another (addressing research question 2). Finding an interesting video on YouTube of a rap battle, students moved the notion of rap battles into another interstitial learning space, activating the activity types *experiencing the known* and *applying appropriately*. As Erstad (2011) argues, young people move between different contexts of learning in a constant flow of activities; the boundaries between these learning contexts are never clearly defined. Such was clearly the case in this technology-enhanced classroom, and the illustrative example of rap battles confirms the reality of this fluidity and movement of ideas.

### **5.6.1 Bridging Interstitial and School-Sanctioned Learning Spaces**

Prevalent in the rap battle interstitial learning space is how engaging and rich informal learning experiences can be. Illustrative examples such as this illuminate how teachers need to be aware of what is happening outside their classrooms or in non-sanctioned learning spaces. These experiences are a part of *known*; these are the experiences students bring into the classroom and the subjectivities that could to be meshed with curriculum (see New London Group, 1996). As an interstitial activity, rap battles differed significantly from the school-sanctioned activity in the science classroom (the parachute activity). Students did not find the parachute activity engaging; as a result, they rap battled instead. Understanding the learner's needs is key to teachers being able to design tasks that are engaging and authentic (Short et al., 2018). Rap battles and other activities occurring in interstitial learning spaces have great potential to engage the learner and it

appears should be considered when designing future tasks. Using modes such as rap rather than focusing on traditional pencil and paper modes offers many affordances for the K-12 classroom. Since learners come with a range of learning preferences (e.g., preferred modes), it is crucial that teachers aim to activate different knowledge processes in their task design to support a wide variety of learners. Also, as educators consider ELL students from beginner to more advanced, incorporating their experiences and background knowledge provides opportunities for students to enter into the learning. For example, this might mean teachers getting to know their learners' interests and then targeting the activity type *experiencing the known* to incorporate students' interests into their task design.

Both agency and engagement were two concepts associated with the interstitial learning spaces I studied. Unlike the school-sanctioned learning spaces where the learning was designed by a teacher and guided by the government-mandated curriculum, students in interstitial learning spaces had more agency to determine what was explored and what learning experiences occurred. Through illustrative examples such as rap battles, I have illuminated that when students (ELL or not) have agency, student engagement followed. These learning experiences also provided opportunities for students to extend their communicative repertoires (Rymes, 2012). However, although agency is potential reason why interstitial learning is attractive to students, there is also a danger when K-12 teachers bring interstitial learning experiences into the classroom: a danger Sefton-Green & Erstad (2013) term the “pedagogicization of everyday life” (p. 15). While this notion has become increasingly popular in the literature as a solution for bridging the out-of-school context and the school context, bringing interstitial learning experiences into the classroom is not necessarily the ideal or only solution to bridge these two social contexts. The danger is that it may deny student agency in interstitial learning spaces.

For example, Low's (2011) study explores critical hip-hop pedagogies in several urban high school classrooms. Working with a teacher, Tim, Low collaboratively drew on the students' interests in hip hop culture and spoken word forms to develop a high school language arts curriculum. The intent of the course was to teach the "spoken word . . . a category used to describe forms of poetry and performance in which [the artist] recites poetry, often musical accompaniment ranging from jazz ensemble to bongo [drumming]" (p. 13). Both Low and Tim had good intentions of incorporating student interests and interstitial activities into the classroom, and it was suggested that this type of pedagogy was being responsive to the needs and interests of the students. However, Low's study noted challenges; for example, some students felt the class was "dumbing down the curriculum" (p. 25). During my final interviews with student participants, many of them expressed the importance of learning how to read and write and felt that their teachers were not spending enough time doing this. Some commented on how they preferred less focus on technology and more on basic literacy skills. These interviews demonstrate how students in this technology-enhanced classroom valued school-sanctioned learning. It is not always necessary for teachers to incorporate interstitial activities into school-sanctioned learning experiences.

However, although I point out the dangers of "pedagogicization of everyday life," I am not offering a resolution to these challenges. It is up to each individual K-12 educator to consider their own social contexts and learners and to determine what works in these contexts. While teachers may want to exercise caution with regard to bringing rap battles into the classroom and other daily tasks, they could use metalanguage to explore with learners this example of a genre (here, the learners clearly have an understanding of the patterns and conventions of Rap Battles) and to discuss with students how different cultural contexts give rise to particular social and

discourse conventions, including the patterns and elements of language they use to convey meaning for particular purposes and audiences. Such explorations may serve as a way to support learners to become “linguistic (multimodal) anthropologists” (“language detectives” who have a heightened (critical) language awareness and language usage). In sum, I think this example of rap battles suggests possibilities for teachers to engage their students in rich discussions about social conventions of language use and contexts of culture (home, school, affinity group and so on...) that students can apply in other project work.

Still, the reality for K-12 educators is that their students are engaging in rich learning experiences in interstitial learning spaces and that these experiences offer what a classroom context may not be able to offer. These interstitial learning experiences (part of the students’ *known*) have changed due to the affordances of digital technologies (e.g., being able to access a YouTube video introducing Rap Battles) and it might not be familiar to teachers. However, the following dissertation has illuminated how it is crucial that educators understand these subjectivities, such as the *known*, in order to utilize the *known* as resources for learning, as suggested by the New London Group (1996). This reality underpins a call to K-12 educators, curriculum designers, and researchers that change needs to occur in school-sanctioned learning spaces in order to engage students more deeply in their learning. This requires governments to consider how they design curricula and what is taught in classrooms. In particular, not only do curriculum designers need to consider the interstitial learning experiences (part of the *known*) of students, but teachers also need to consider how they design engaging tasks that bridge multiple lifeworlds and school.

In the final chapter of this dissertation, I discuss the implications and limitations of these findings for teaching practice and suggest directions for future research.

## Chapter 6: Conclusion to the Study

### 6.1 Back to the Beginning: Revisiting the Research Questions

This dissertation was written across two cities, during a pandemic, on planes, at the back of coffee shops, and sitting in various interstitial learning spaces such as the backyard, kitchen table, in the hallways of conferences, and cruise ship lounges (Wong, 2019). Each word was written with a passion for disseminating this work and a hope that it would have a significant impact for classroom learning. Like the lives of students in this technology-enhanced classroom, mine consists of moving between various learning spaces. During my adolescent years, I developed a passion for exploring different virtual worlds and interstitial learning spaces. From online chatrooms to Savage Garden fan forums to Chinese Drama fan chatrooms, I became involved in a variety of interstitial learning spaces. These interstitial learning spaces differ significantly from those my participants have experienced. Yet from these experiences, my participants' experiences, and my prior teaching experiences, I realize that the learning in these interstitial learning spaces often has a far greater impact and engagement level than the learning in school-sanctioned learning spaces. This realization has been further supported not only by scholarship (e.g., Abrams, 2016; Black, 2008; Black & Reich, 2012; Black et al., 2017; boyd, 2014; Burke, 2013; Cingel et al., 2019; De Haan et al., 2014; Ito et al., 2013; Jenkins et al., 2016; Lam, 2009; Lam & Smirnov, 2017; Lam & Warriner, 2012; Lange, 2014; Marsh, 2010; Nardi, 2019; Yi, 2009), but by this ethnographic case study of a grade 6 technology-enhanced classroom, in which I illuminate how these learning spaces often run parallel to what is happening in the classroom.

These learning spaces blend, weave, and mix with other spaces. Burnett and Merchant (2014) comment on how incidents, individuals, places, and objects are not completely in the

virtual or material world, that “location seems to span both material and virtual worlds, and our sense of what we might otherwise see as ‘context’ erodes with the over-layering and interweaving of incidents across these spaces and in relation to different layers of interests” (p. 43). Both learning and knowledge transverse (Lemke, 2004) across different kinds of contexts and have been applied and reapplied to, and with, a variety of different forms of understanding (Erstad et al., 2016; Sefton-Green, 2016). Thus, being in a physical space such as the classroom does not limit access to other learning spaces, especially with the affordances of digital technologies.

In this final chapter, I revisit my two research questions:

1. What knowledge processes do learners use in inquiry-based tasks designed by teachers in a grade 6 technology-enhanced classroom?
2. Relative to the knowledge processes used in inquiry-based tasks, in what ways do learners mobilize *the known* (as unique to them) across learning spaces?

As well as discussing the answers to these questions, I elaborate on the potential implications of these findings for practice and research.

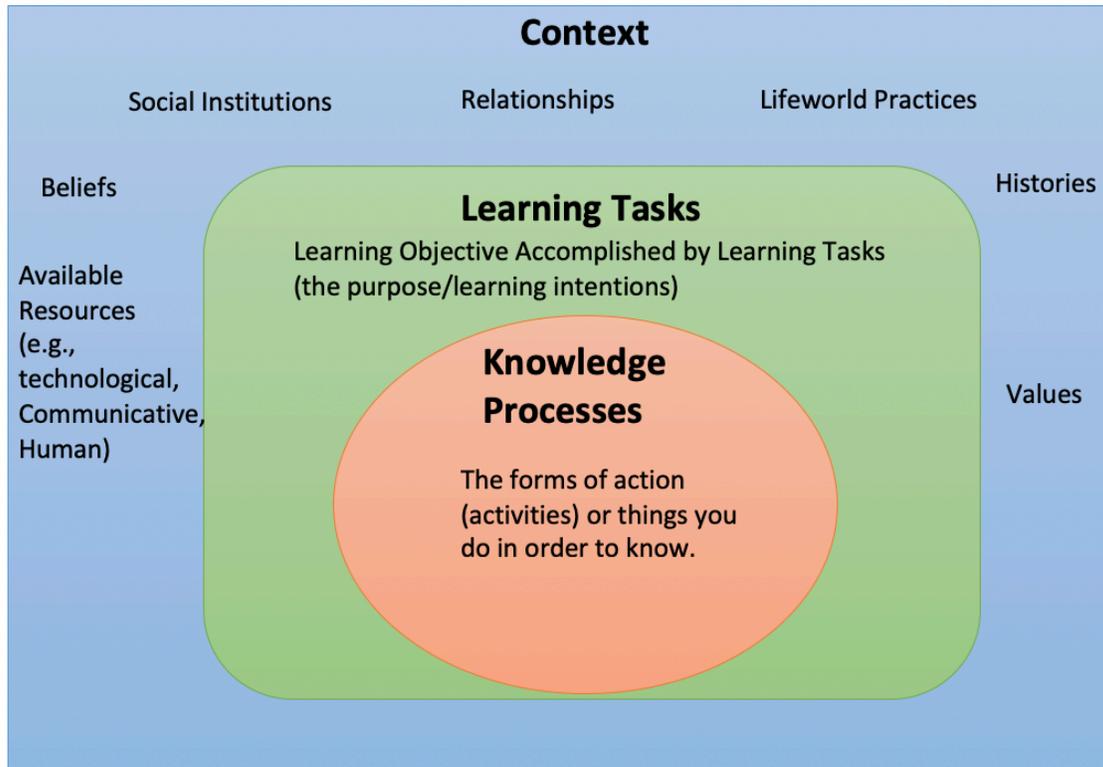
## **6.2 Summarizing the Findings and Implications**

### **6.2.1 Returning to the Knowledge Processes and Task Design**

When addressing Research Question 1, and more specifically the knowledge processes used by students in the tasks their teachers’ designed in this technology-enhanced classroom, I reported that students engaged in rich learning experiences: largely due to the innovative teaching practices, task design, and social context that allowed learners to intentionally use a variety of their knowledge processes. In Chapter 4, I introduced Figure 4.1 (reproduced below),

which outlines how I planned to conceptualize and contextualize the knowledge processes and learning tasks in this technology-enhanced classroom:

**Figure 4.1:** *Contextualizing this Technology-Enhanced Classroom*



With regard to the context, in Chapter 4, I discussed Principal Ispirazione’s school vision and elaborated on both the school district vision and teachers’ teaching philosophies. From my analysis, of the knowledge processes that students’ used, it suggested that teacher task designs were 1) meaningful, 2), rich, 3), rigorous, and 4) making authentic connections to the real world—all of which formed part of the school culture at Cypress Hills School. Similarly, Lotherington and Paige’s (2017) research of Joyce Public School emphasizes the role of a principal when developing a school culture that invites both students and staff to engage in

innovative practice. Principal Paige’s vision for her school was described as not being dictated by curricular standards or priorities; she knew that accomplishing this vision required both ownership and risk-taking. Principal Paige described her “fearless” belief that her school could be a successful school. She aimed high, believing in the children and encouraging her teachers to cultivate opportunities (e.g., fairs, chess competitions, and performance experiences) to enrich learning. As well, teachers at Joyce Public School were guided by reflective teaching. By these means, Principal Paige also reinforced a culture of success and achievement.

At Cypress Hills school, learning was designed to encourage students to make connections and apply their understandings to different contexts. Considering the specific school context (see Figure 4.1) and Lotherington and Paige’s (2017) discussion of Joyce Public School, pedagogy at Cypress Hills School appeared to be informed at the district level by the notion of personalization of learning (see Ontario Ministry of Education, 2013b; Sizer, 1999). Learning was not a one-size-fits-all model; instead, to personalize the learning, teachers needed to meet each student’s learning needs. This philosophy of learning was part of all the professional work and conversations in the school district, where the study was situated, at every level: from system administrator professional learning to school-based staff professional learning. Also part of the context at Cypress Hills school (see Figure 4.1) was Principal Ispirazione’s vision of creating a school culture that invited teachers to cultivate and design tasks so students could make authentic connections to real world applications but also connect to their *known*, which includes the lifeworld practices, knowledge acquired from lifeworld practices, attendant languages, discourses, and registers (communicative repertoires). As described in Chapters 4 and 5, Principal Ispirazione was instrumental in hiring teachers who shared a similar philosophy of learning, and she was also effective in encouraging and cultivating teachers that created

innovative learning experiences. The professional learning environment Principal Inspirazione cultivated with her staff was intentionally guided by these four themes: meaningful, rich, rigorous, and making connections. As a result, Cypress Hills teachers embraced and utilized pedagogical moves (knowledge processes) to encourage their students to draw on their rich experiences outside of the classroom, and to both weave and apply their understandings into new contexts, therefore bridging lifeworld and school practices. Also, here teachers meshed curriculum and subjectivities, the students' *known*, recruiting these subjectivities and their attendant languages, discourses and registers as resources for learning, putting into action what the New London Group (1996) suggested.

In Chapter 5, I examined five illustrative examples: Math Building Project, World War 2 Effects, Math Art, Silly Putty, and Rap Battles. Four of these illustrative examples focused on analyzing the knowledge processes that students activated which gave a better understanding of the pedagogical moves made by teachers in this technology-enhanced classroom. Table 6.1 below shows a breakdown of the knowledge processes students activated during these tasks (answering research question 1).

**Table 6.1:** *Summary of Knowledge Processes used by Teachers*

Context	Illustrative Example/Learning Tasks (learning intention)	Data	Knowledge Processes
<ul style="list-style-type: none"> <li>• School District Vision</li> <li>• School Vision</li> <li>• Teacher Philosophies</li> <li>• Students' experiences</li> </ul>	<p><b>Math Building Project</b> -connect/apply math concepts to an actual context</p>	<p>Interview Data Project Artifact (PowerPoint)</p>	<ul style="list-style-type: none"> <li>• Experiencing the Known--allowing kids to tap into their personal interests/background knowledge</li> <li>• Experiencing the new--scaffolding the learning (e.g., frontloading the vocabulary)</li> <li>• Conceptualizing by Name--learning to use</li> </ul>

<p>outside of the classroom (e.g., YouTube, searching information on Google, stories told from grandparents, conversations with parents)</p>			<p>generalizing terms/vocabulary, pre-teaching the math concepts</p> <ul style="list-style-type: none"> <li>• Conceptualizing by Theorizing--putting concepts together</li> <li>• Analyzing Critically--reasoning and establishing functional relations (e.g., cause and effect; I do this with my design and this happens)</li> <li>• Applying Appropriately--taking concepts learned and applying (e.g., perimeter and applying it to measuring the actual school space)</li> <li>• Applying Creatively--taking concepts learned and applying in new innovative ways (e.g., applying the concept of perimeter understanding to make a new school design and PowerPoint Presentation Design)</li> </ul>
	<p><b>World War 2 Effects</b> -apply the pillars of democracy to a real-life event (e.g., current event)</p>	<p>Visual and Linguistic Artifact Interview Data</p>	<ul style="list-style-type: none"> <li>• Applying Creatively--applying the pillar of democracy and article from the internet to create a visual representation.</li> <li>• Experiencing the New--scaffolding the concept of pillars of democracy in mini-lesson.</li> <li>• Experiencing the Known--inviting students to bring in their own experiences and understandings to support the learning of the concept of the pillars of democracy.</li> <li>• Applying Appropriately--applying the curricular concept of the pillars of democracy to an appropriate news article.</li> <li>• Analyzing Critically--explaining why the news article choose provided the evidence of a particular pillar of democracy.</li> </ul>

	<p><b>Math Art</b> -take an abstract mathematical concept and make it concrete</p>	<p>Visual Artifact Interview Data</p>	<ul style="list-style-type: none"> <li>• Experiencing the New--explicitly pre-teaching new information (x and y variables, vocabulary).</li> <li>• Conceptualizing by Naming—naming the elements of the equation on their art project</li> <li>• Applying Creatively—applying a mathematical equation to an art piece.</li> <li>• Analyzing Functionally--reasoning and making logical connections between art and math equation.</li> </ul>
	<p><b>Silly Putty</b> -create a product to sell</p>	<p>Interview Data Digital Artifacts (website, advertisements) Email Exchanges</p>	<ul style="list-style-type: none"> <li>• Experiencing the Known--accessing information on YouTube.</li> <li>• Applying Appropriately--applying the knowledge of accessing information from online experts on YouTube to use for a class project.</li> <li>• Apply Creatively--taking the understanding of business (buying, marketing and selling) and creating a product.</li> <li>• Experiencing the New--scaffolding via mini-lessons (e.g., what is a product, how to sell a product etc.) and from family expert human resources.</li> <li>• Conceptualizing by Naming--learning to use business vocabulary in a business context</li> <li>• Analyzing Critically--evaluating other people's perspectives (e.g., what does the buyer want?)</li> </ul>

My analysis of student activated knowledge processes-illustrated that teachers in this classroom intentionally targeted a wide range of different activity types. Most projects, such as the ones described in this dissertation, started with the teachers using didactic pedagogy to

explicitly pre-teach the language, vocabulary, and necessary background skills for students to engage in more open-ended tasks. It appears this pre-teaching was done largely because the teachers at Cypress Hills understood the learning needs of their English Language Learner (ELL) students—needs I realized after analyzing the provincial curriculum and assessment tools. In Alberta, teachers are expected to use the Alberta English as a Second Language (ESL) Benchmarks to both assess and plan for instruction for their ELL students (see Government of Alberta, 2011b). This ESL Benchmark assessment is broken down into five language proficiency (LP) levels: LP1 to LP5. LP1 is a beginner level; LP5 is an advanced level. Looking at the Alberta ESL Benchmarks clearly indicates what teachers need to focus on with students at each language proficiency level: vocabulary, grammar, syntax, reading comprehension, sociolinguistics, discourse. The ELL students in this study, according to their teachers' assessments, were at a language proficiency (LP) level between 3 and 5, which placed them at an intermediate to advanced level in terms of their English language development. On the Division 2 Alberta ESL Benchmark tracking sheet (which these Grade 6 ELL students were working at), intermediate to more advanced levels include developing academic language skills such as learning subject-specific words, academic words, and descriptive words as well as writing compound/complex sentences.

Research also indicates that scaffolding, pre-teaching vocabulary and explicitly teaching language, is important for ELL students (see Calderòn & Slakk, 2020; Singer & Fenner, 2020). After analyzing the assessment tools and these students' language proficiency levels, it appears that certain knowledge processes were targeted such as didactically teaching *experiencing the new* and *conceptualizing by naming* because of these students' learning/language needs. Tasks provided opportunities for learners to learn screen and print discourses/genres, PowerPoint

presentations and progress reports, business marketing genres, synesthesia and multimodal transductions, critical reading, and the language of explanation and argument. Where appropriate, these learners were taught the related language and literacies.

Two of the most commonly activated knowledge processes in this technology-enhanced classroom, as discussed in Chapter 5 and as summarized in Table 6.1, were *experiencing the known* and *applying creatively*; although as noted students activated a range of knowledge processes in their inquiry-based task experiences. Here these two activity types, *experiencing the known* and *applying creatively*, encouraged ELL students to bring in their experiences from other learning spaces and also their prior knowledge (whether from a previous assignment or prior understanding from another grade). By using these two knowledge processes, students drew on their *known* to support their completion of school-sanctioned activities. I also noted the movement or transfer of ideas into this school-sanctioned learning space from different learning spaces into the classroom (answering research question 2). One reason this movement is particularly significant is that, by activating these two activity types, learners were encouraged and provided with potential opportunities to bridge both lifeworld and school literacies: for example, when students brought in their technological knowledge of effectively seeking information using internet sources such as searching for videos on YouTube to support a business class project. As I discussed throughout this dissertation, it is important that K-12 educators gain a better understanding of what occurs outside of the classroom because this understanding could directly impact the learning in the classroom. When educators are open to these experiences, they will be able to design more meaningful tasks, using these *known* as resources for learning.

Inquiry-based learning (see Clifford & Marinucci, 2008; Frieson et al., 2015; Coiro et al., 2016) was also prevalent in this technology-enhanced classroom. Though many of the learning tasks were designed by teachers only, they also invited students to actively participate in task designing; as a result, innovative learning experiences such as the Math Building Project occurred. As with other inquiry-based learning experiences (e.g., Clifford & Marinucci, 2008), the learning came from the students' interests, allowing students to explore their own questions while the teacher acted as a facilitator during this process. These innovative learning experiences occurred because teachers intentionally connected learning about curricular objects to an actual context: for example, applying mathematical concepts such as perimeter and area to create a new school design. Teachers also listened to their students and found opportunities to make connections between the world and the classroom. In inquiry-based environments, the role of the teacher is crucial; in fact, it is suggested by this study that an inquiry project is successful when that these educators capitalized on opportunities to incorporate these learners' understandings into the task design (see Clifford & Marinucci, 2008). Early and Kendrick (2017) argue that "well-designed and highly supported inquiry approaches that place equal emphasis on linguistic diversity and pedagogical design . . ." are positive (p. 55), which was the case in this classroom.

Arguably, these types of learning approaches potentially provide opportunities to marry multimodal text forms with linguistic and cultural diversity (see Early and Kendrick, 2017). Based on my analysis, it is reported such opportunities arose in this classroom. Although students in this classroom did not utilize their first languages, they drew on their rich multimodal experiences in interstitial learning spaces such as accessing visual and written information and internet videos of experts using internet sources (e.g., YouTube) and accessing family experts outside of the classroom (e.g., oral stories grandparents had told) to complete school-sanctioned

activities. However, it is also clear from my analysis that in this technology-enhanced classroom, students were able to engage many digital literacies due to the affordances of technologies, such as using Google to look up information, creating visual images on Google Drawings, and watching YouTube videos. These digital technologies provided students with alternative choices and tools to express their meaning-making: tools not readily available in a more traditional classroom. One of the benefits of a technology-enhanced classroom is that it provides choices, both paper and technology options. However, I also want to acknowledge here that I recognize there are issues of equity and access when using digital technologies (see Darwin, 2018; James, 2014; Luke, 2018; Rogers et al., 2018) and potential issues when it comes to searching for information online such as encountering deepfakes (Yadlin-Segal & Oppenheim, 2020). As I have previously discussed in Chapter 2, there are problematic issues with regards to using digital technologies including exclusion. Individuals can be excluded based on age, race, gender, geopolitical contexts and other facts. Luke (2018) has argued how everyday issues faced by digital youth is an ethical matter. He asserts that

digital ethics—an ethics of what it is to be human and how to live just and sustainable lives in these technologically saturated societies and economies—is *the* core curriculum issue for schooling. It is not an adequate educational, philosophic, or political response to current cultural, geopolitical, and economic conditions and events for this generation of teachers and scholars, parents, caregivers, and community Elders to simply document or celebrate the emergence of new digital youth cultures without attempting to call out ethical parameters and concrete historical consequences for communities, cultures, and, indeed, human existence in this planetary ecosystem. This is a generational and

pedagogic responsibility as we stand at a juncture where residual and emergent cultures meet...(p. 187).

Although this is beyond the scope of my study, I recognize and acknowledge the notion of digital ethics that Luke has discussed, it is a critical component of a technology-enhanced classroom and educators need to be aware of this rather than “celebrate” the digital. As Darvin (2018) discussed there is a call for educators to be aware of the multitude of diverse digital repertoires of students and how students use technologies differently at home. Recognition and action are the first steps to addressing issues of digital ethics.

### **6.2.2 Creating a School Culture that Fosters Meaningful, Rich, and Rigorous Learning Opportunities**

This study showed what a technology-enhanced classroom can potentially permit and how these environments may support desired knowledge processes which in turn may encourage teachers to consider/reconsider how they design tasks in the elementary classroom, particularly to engage ELL students. Effective task design starts with the school context (see Figure 4.1) and with an instructional leader, a principal, who cultivates and fosters a school culture inviting teachers and students to engage in meaningful, rich, rigorous tasks that make connections across disciplines and the real world. It is suggested that a critical part of building this school culture includes a “common philosophy” of learning, which I have noted was the case at Cypress Hills school. Professional learning, and how it is planned and implicated, is critical for building such a school culture (see City et al., 2009; Fullan et al., 2006; Timperley, 2011). From my own experiences supporting schools as a system leader and as a researcher, I can attest that professional learning needs to be purposeful. It not only needs to align with the school district and school vision but needs to be supported by the instructional leader and teachers to be

successful. In other words, an alignment of all initiatives is necessary, as Soto and Singer (2020) argue. Leaders need to lead with a shared vision; therefore, instructional leadership (the principal) is crucial when building this type of environment, especially when it comes to fostering a school culture which encourages ELL students to flourish (see Dormer, 2016). Scholarship suggests that school leaders need to have a sound knowledge of how to support ELL students. To foster opportunities for and to encourage linguistic and cultural diversity, these leaders need to equip their teachers with the strategies and skills to support their ELL students.

As this dissertation has highlighted, learners can be co-designers, or teachers might incorporate the students' interests, questions, cultures, and languages, discourses and registers, lifeworld practices, the subjectivities, the *known*. In other words, learning is not about "covering the curriculum," which Clifford and Marinucci (2008) define as "devising lectures, labs, activities and assignments that address the content list, item by item. . . ." In contrast to covering the curriculum, an inquiry perspective means "the course is not just a list awaiting delivery. It demands interrogation and watchful attention to the opportunities for this group of students, this time around, to make learning . . . a memorable—not just a memorizable—experience" (p. 685). However, I also advise caution with regard to schools and school districts taking up only inquiry-based learning methods of instruction. Part of personalization of learning (see Ontario Ministry of Education, 2013b; Sizer, 1999) and knowing the learner is understanding how a student learns best; preferred modes for meaning-making can include multiple languages, learning preferences, and building an understanding of students' past experiences. Although this study highlights a technology-enhanced classroom that provides a variety of modes (digital and not) to express meaning, some students learn best with more traditional means of instruction such as pencil and paper. Notably, in the final focus group interviews with my participants, many expressed how

they preferred more traditional approaches to learning. They also elaborated on how, although they used digital technologies in interstitial learning spaces, these technologies were not their preference in the classroom. They felt that teachers were not spending enough time teaching them to read and write. These interviews indicate that K-12 educators need to consider their learners and their needs before making decisions about task design. Not every student will prefer or learn best with inquiry-based learning experiences.

In this technology-enhanced classroom, due to the affordances of digital technologies a student could engage in digital literacy practices, use digital modes to express meaning, and access information in various learning spaces that were not necessarily part of the physical classroom space. However, while technology may be present in K-12 classrooms, it is often not used (e.g., Blackwell et al., 2014; Fullan, 2013) if teachers do not have the knowledge or training. This study is not advocating for the universal use of technology because good pedagogy, as discussed previously, is intentionally designed by the teacher (New London Group, 2000). Rather, this dissertation advocates that K-12 educators, researchers, and stakeholders consider technology as another tool in the classroom and make it available to their students. In my initial interviews with the teacher participants, many expressed that they were not “tech experts” but realized that technology was an important option for their students, especially when preparing them for their future schooling and careers. While incorporating daily opportunities for students to use technology, they provided non-digital tools as well. Students were given choices; this notion of student choice is an important part of the inquiry model of learning and potentially plays a role in bridging lifeworld and school practices.

### 6.2.3 Bridging Lifeworld and School Practices

When addressing Research Question 2, I return to Chapter 2 in which I discussed how scholars such as Schultz and Hull (2002) noted a gap in educators' and researchers' understandings of what occurred in out-of-school contexts and school contexts. In particular, I discussed how the research gap was how students bring their informal knowledge of technology and their *known*, which includes their lifeworld practices, attendant languages, discourses, registers and knowledge acquired in lifeworlds, into the formal learning spaces of a classroom. Although students are using technologies in interstitial learning spaces (see Abrams, 2016; Black, 2008; Black & Reich, 2012; Black et al., 2017; boyd, 2014; Burke, 2013; Cingel et al., 2019; Ito et al., 2013; Jenkins et al., 2016; Lam, 2009; Lam & Smirnov, 2017; Lam & Warriner, 2012; Lange, 2014; Marsh, 2010; Nardi, 2019; Yi, 2009), there is still a limited understanding of these interstitial activities and how educators might bridge interstitial and school-sanctioned activities. As previously mentioned, students at Cypress Hills activated the knowledge processes of *experiencing the known* and *applying creatively* which encouraged them to bring their lifeworld experiences into the school-sanctioned learning space, thus weaving between lifeworld and school practices (Cazden, 2006). Students in this technology-enhanced classroom (such as Samy, Eddy Teddy, and Starfire) applied their *known* to support school sanctioned projects: for example, a grandparent's story to understand a pillar of democracy (accessing a family expert outside of the classroom), YouTube to find an idea for a business "product" (accessing an internet expert outside of the classroom), and a father's business expertise to support the development of a business register appropriate for an advertisement (accessing a family expert outside of the classroom). Also, in this classroom the theme of multimodal representations of meaning-making crossing learning spaces was prevalent. It is suggested that this mobilization of

knowledge between and across learning spaces enriched the tasks in the school-sanctioned learning space since students were able to tap into their prior understandings and use “experts” (grandfather, father and YouTube Howcasts) in other learning spaces. As a result, the learning experiences were more meaningful for each student.

The following study had several salient themes which I will briefly summarize here. These themes answered research question 2 and how the *known was* mobilized across learning spaces. More specifically one salient theme was that students in the classroom effectively sought information online (using the internet). These students also effectively sought information from family experts which were a part of the students’ *known*. Another theme included how students effectively sought online (unknown) experts to learn “How to.” In illustrative examples such as Math Building Project and Math Art, students applied their mathematical concepts to complete assignments. In many of the illustrative examples discussed (e.g., Math Building Project, World War II Effects), students used their knowledge of digital tools and design processes to represent and communicate knowledge and understandings multimodally, this also included using pencil and paper. These students also engaged audiences emotionally, such as in the World War II Effects, Child Trafficking example. The salient theme of bringing in linguistic resources for learning including their attendant languages, discourses and registers (as suggested by the New London Group, 1996) was also prevalent (e.g., Silly Putty and the appropriate business register). All of these salient themes illuminate how the *known was* mobilized across learning spaces by the students in this technology-enhanced classroom. I also briefly discussed in Chapter 5 how the knowledge processes were mobilized across tasks in an inquiry-based tasks. For example, *experiencing the known* becomes *experiencing the new* (e.g., the students take their understanding of a present day classroom [*experiencing the known*] and apply this to a future

classroom [*experiencing the new*]). Just as the New London Group (1996) and other scholars (Erstad et al., 2016) had suggested there is a blurring of boundaries between various learning spaces and lifeworld practices.

A significant implication from this study is the influence of outside individuals on the school-sanctioned learning spaces. From a father teaching his daughter the appropriate register to sell a product, to a grandfather's story of a historical event which informed a Social Studies project, the *known* played a crucial role in the classroom: in particular, the completion of school-sanctioned assignments. As previously mentioned, these "experts" were not always in the classroom but rather were invited into a school-sanctioned learning space. Scholarship (e.g., García-Sánchez & Orellana, 2019; Hyvärinen et al., 2016; Marshall & Toohey, 2010) also reflects the need for teachers to embrace their students' prior experiences and invite family members (e.g., parents, grandparents) to play a more active role within the classroom. On a practical level, this might involve teachers cultivating opportunities to create Identity Texts (Cummins & Early, 2011) and inviting parents or grandparents to be a part of this process.

In this study, I used the illustrative example of Rap Battles to highlight the rich learning experiences that occur in interstitial learning spaces; these experiences often differed from school-sanctioned ones. Rap battles occurred in the back of a science classroom. The school-sanctioned task was to create a parachute, yet some students chose to do a rap battle. A parallel might be drawn with Wilson's (2004) study, which describes how prisoners entering a designated official space—spaces marked as no entry—"(*re*)configured" the space as social rather than as an institutional site by entering this space and doing social activities such as reading a newspaper (p. 73). Such a (*re*)configuration of space also occurred in this classroom. The students were in a school-sanctioned/institutional learning space (a science classroom), but

(re)configured the space as a social one by rap battling. The physical space of a classroom did not limit their opportunities to engage in student-created tasks (rap battles) that occurred parallel to what was occurring in the classroom (e.g., building a parachute).

Unlike the Math Building Project or Silly Putty, the interstitial illustrative example of Rap Battles was not curriculum-informed. In this way, it differed significantly from what was happening in the classroom, yet it was a rich practice. As an interstitial student-designed task, Rap Battles illustrates several implications for the classroom: that is, teachers can consider incorporating such interstitial practices into the school-sanctioned space. However, as I discussed in the previous chapter, these practices involve many challenges which Low (2011) discusses in detail, such as the potential of “dumbing down the curriculum” (p. 25). This perception might be due to institutional expectations and the need for students to succeed (e.g., to get into post-secondary institutions, students need to do well at standardized tests). The focus for these individuals is about “covering the curriculum” rather than “uncovering the curriculum.” Also, societal expectations of schooling play a role in this perception: for example, rap is done outside of school and not in the classroom. As a result, if teachers are to incorporate interstitial practices in the classroom context, they will need to deal with potential biases and misconceptions. One option is through critical discussion with both students and parents.

Although students experienced both agency and engagement in the rap battle, suggesting the value of (re)configured school-sanctioned learning spaces and encouraging teachers to bring interstitial activities into school-sanctioned learning spaces, there are also dangers in doing this. As I mentioned in Chapter 5, the danger is the “pedagogicization of everyday life” (Erstad, et al., 2016; Sefton-Green, 2016; Sefton-Green & Erstad, 2013). This notion of interstitial learning spaces becoming school-sanctioned learning spaces and vice versa can remove student agency

and potentially disrupt the innovative learning experiences that occur in interstitial learning spaces, since students may be less inclined to participate in these environments as a result. With this in mind, I advocate for K-12 educators and curriculum developers to consider with caution the implications of incorporating interstitial literacy practices in the classroom. An initial step might be to not “condemn” or “punish” such acts but rather for educators to value them as “learning.” In addition, potential changes to both curricula and pedagogical practice should be made with the thought of preserving these interstitial literacy practices, in particular student agency. Rich interstitial practices such as rap battles occur largely due to the lack of restrictions students feel, creating opportunities for students to creatively explore the world outside the school-sanctioned learning spaces.

### **6.3 Contributions**

The following study has several significant contributions. First, it extends our understandings of elementary ELL students in inquiry-based learning environments, where there has been limited research. As I mentioned earlier in this dissertation, curricula across the country (and school districts) shift their pedagogies to inquiry-based learning approaches (see Ontario Ministry of Education, 2013a; Province of British Columbia, 2020b), and educators consider the notions of “Big Ideas” and “Essential Questions” (see McTighe and Wiggins, 2013), inquiry-based approaches are becoming increasingly prevalent in K-12 classrooms across the country. Therefore, a study such as this is timely. The following study also provides a better understanding of the range of knowledge processes and related multimodal communicative practices that ELL students can successfully participate in, and raises questions about how to build on this in task design effectively. Second, it extends our understanding with regards to how informal learning moves into the classroom context. As it is suggested by my findings, when

teachers incorporate opportunities to bring in the *known* by targeting such knowledge processes as *experiencing the known* and *applying creatively*, students are invited to bring in their *known*, which includes their informal learning experiences. This *known* has the potential to enrich the learning that occurs in the classroom. Finally, it provides a deeper understanding of technology-enhanced environments and the potential innovative learning experiences that can occur in these environments. In these types of environments, there is choice for learning, both digital and not.

#### **6.4 Limitations of the Study**

One limitation concerned timing. Although I was able to spend an extended period in my research site, I missed the first four months of the school year: a time when routines are established in a classroom. Therefore, I spent much of the beginning of my study catching up with the group (e.g., what happened at the beginning of the year? Why did you do this project? What were the previous lessons you had prior to this project?), which was a limitation. Fortunately, the students were very helpful with catching me up, but the classroom observation of these routines being established would have added breadth and depth to my understanding of this technology-enhanced classroom: in particular, when it came to understanding the students' learning experiences in this classroom. Also, as my data was collected several years previously, the world continues to change, therefore there is a limitation with regards to my findings and relevance to the current time. However, as I complete this dissertation, we are now in a COVID-19 pandemic, and in many ways this study has become more relevant especially for those elementary educators using digital technologies to support their students in an emergency remote learning environment.

While I had many rich discussions with the participants in my study about the literacy practices and learning experiences occurring in the interstitial learning spaces, I was not always

able to observe these practices in person unless they were a part of the classroom/school learning spaces. Having an opportunity to observe such practices would have provided a better understanding of this particular phenomenon (Duff, 2008) and also the interstitial literacy practices that these students described.

Although outside of the scope of this study, a potential limitation was the fact that I was not able to interview the parents and thus gain a deeper understanding of the interstitial literacy practices that occurred in the home context. For projects such as Silly Putty and World War 2 Effects in which the *known* played a role, I would have gained a deeper understanding of these illustrative examples if I had been able to interview Samy's grandfather or Starfire's father. In particular, if the scope of my study had allowed this, I would have considered the role of the parent/grandparent as expert and the socialization process that occurred in the home context. This is also reflected in previous literature (see Heath, 1983; Marshall & Toohey, 2010).

Finally, though I had many informal conversations and focus group interviews with the teachers in this study, time was often limited. As a result, I was not able to ask all the questions I wanted about task design. In particular, though outside of the scope of this study, I wondered how the teachers' own school-sanctioned experiences and lifeworld experiences may have influenced their task design. The *known* and prior experiences have considerable implications for students learning. How the teachers in this context were socialized through school or home could potentially have an impact on the learning experiences of their students in this classroom context. This is a future research direction that needs to be investigated.

## **6.5 Future Research**

Although a growing body of literature explores the learning experiences of K-12 students, including ELLs utilizing technology (e.g., Black, 2006; Lam, 2003; Erstad et al., 2016;

Thorne et al., 2009; Yi, 2005), our understanding of the learning tasks occurring within school and out-of-school learning spaces is still limited. Because technology continues to change, especially given the context of 21<sup>st</sup> century inquiry approaches advocated by ministries of education across Canada and beyond, we need to continue researching digital literacies and technology-enhanced classrooms. This study illustrates the need for researchers to explore technology-enhanced classrooms: in particular, the various learning spaces within these classrooms. As my findings have indicated, students are moving freely, both themselves and their knowledge, among a variety of learning spaces within the classroom and beyond. Understanding how these various learning spaces impact the learning experiences in the classroom is crucial for researchers, practitioners, and policy makers.

Future research must explore the multimodal meaning-making in which K-12 students engage within interstitial learning spaces. In particular, research should focus on examining networked learning spaces such as YouTube or social media websites like Snapchat. Although not elaborated on in this dissertation, I note that many of the students engaged in such practices outside of school and spoke often about these informal learning experiences in their researcher journals. It is suggested that gaining a better understanding of these interstitial learning spaces is critical for teachers as students continue to carry their *known* into the classroom. Also, understanding how knowledge and learning moves across various different learning spaces (Erstad et al., 2016; Sefton-Green, 2016) will help teachers and researchers gain a better understanding of how to engage and support students within the classroom context.

Finally, research also needs to include diverse social and geographical locations, with participants coming from different backgrounds and using a variety of digital tools. This study was undertaken in a North American context, but technology-enhanced classrooms also exist in

other countries and contexts. Therefore, future studies should reflect this diversity and extend the breadth and depth of our collective understandings of digital learning contexts.

## **6.6 Closing Thoughts**

This dissertation has explored knowledge processes used by students, arguably illuminating the pedagogical moves that teachers drew upon to create innovative tasks for elementary-aged students, the majority of whom were ELL, in a technology-enhanced classroom. My initial interest in this study was sparked because of my own experiences as an elementary teacher, a technology teacher, and a “techno” kid who eventually taught in a technology-enhanced classroom. Technology provided many affordances and options for my own students, especially when they engaged in meaning-making. As I read the literature, I recognized a research gap between what I was reading and what I was noticing in the classroom context. As a teacher educator and a researcher, it is suggested that as technology continues to change, there is an urgent need for teachers, policy makers, and researchers to gain a deeper understanding of technology-rich environments, the tasks teachers design in these environments, and students’ experiences in out-of-school technology-rich environments.

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## Appendices

### Appendix A

#### A.1 Teacher Initial Letter



**THE UNIVERSITY OF BRITISH COLUMBIA**  
**Department of Language & Literacy Education**  
**2125 Main Mall, Vancouver, BC, Canada V6T 1Z4**  
**Tel: (604) 822-5788 Tel: (604) 822-3154**

**(Date)**

#### **Letter of Invitation and Initial Contact (Teacher)**

**Title of study:** An Ethnographic Case Study of the Literacy Practices of English Language Learners within a K-12 Technology-Enhanced Classroom

Dear Colleague,

My name is Melanie Wong. I am a [name of city] classroom teacher and also a Ph.D. candidate in the Department of Language & Literacy Education at the University of British Columbia in Vancouver. I am writing to ask you to consider allowing me to use your classroom as a research site for this study, for the remainder of the 2014-15 school year.

My research explores the different kinds of literacy practices that Grade 5 or 6 English language learners engage in when they are in class. What I mean by “literacy practices” includes the usual reading and writing, of course. But I also mean drawing pictures, making videos, playing music, and using the kinds of technology that can be found the classroom (for example, computers, iPads, SMARTBoards, websites, online applications like Desire 2 Learn). I am conducting this study because there is not much research about the literacy practices of English language learners in elementary classrooms where a lot of learning technology is used, as I understand is the case in your class.

This research has been approved by UBC, by the [School District Name], and the school principal. Parents of all children in the class will also be contacted to provide information about this study and to ask for their permission to allow their child’s participation. The children will also be asked for their permission to participate in this study.

If you agree to allow me to use your classroom as a site for this study, this is what will happen:

- I will observe the literacy practices that the students in the class engage in during regular classroom hours. I will do my observations two times a week (approximately 3 to 4

hours) with an initial daily two-week observation. I would negotiate with you about when and how these observations are conducted to ensure that the times selected are acceptable with you.

- I will audio-record some class sessions for the purposes of more in-depth data analysis.
- I will collect copies of selected classwork from students who have been allowed to participate and who also agree to participate in this study. This may include creative and/or school writing, artwork or models, or materials that students create using an electronic device (e.g., on a computer, on an iPad, using e-portfolios, using Desire 2 Learn).
- I will ask participating students to keep a short monthly literacy journal. The literacy journal will provide me an opportunity to understand the literacy activities your students do on a regular basis and what they think about these activities.
- I will interview participating children in a group with their classmates about their thoughts on the classroom literacy practices they engage in. These interviews will be audio recorded so I can use them for data analysis.
- I will interview you, the classroom teacher, two-four times over the duration of the study for your perspectives on the literacy practices your students engage in.

I will make every effort not to interrupt classroom instruction because I want to understand what you and your students usually do.

I do not believe there is anything in this study that could harm you. The study does not present any other risks than what would be expected in a daily classroom context. I am not conducting this study to evaluate you or your teaching. I am interested in how English language learners engage in the literacy practices in your classroom.

There are several potential benefits to the people who participate in this study. First, students will likely gain a better understanding of themselves as learners. Second, there is the potential that what is learned in this study will impact changes in policies in the school, school district, etc. and this could result in positive benefits for education.

This study is not related to the [School District Name]. It is being conducted by a doctoral student for the purpose of completing her degree requirements at the University of British Columbia. At no time before or during this study should you feel any pressure from anyone to participate. Your participation is voluntary. If you have any questions about your rights as a participant in this study, you can contact the Research Participant Complaint Line in the UBC Office of Research Services at 604-822-8598 or if long distance, e-mail [RSIL@ors.ubc.ca](mailto:RSIL@ors.ubc.ca) or call toll free 1-877-822-8598.

Your identity, your students' identities, and the school's identity will be kept strictly confidential.

If you are interested in learning more about any aspect of this study, or would like to volunteer to be a participant, please contact Melanie Wong (co-investigator) by phone at \_\_\_\_\_ or, if you prefer, by email at \_\_\_\_\_.

Best regards,

**Melanie Wong, PhD Candidate**

Department of Language & Literacy Education, UBC

Phone: \_\_\_\_\_

email: \_\_\_\_\_

**Dr. Margaret Early, Associate Professor (Co-Supervisor)**

Department of Language & Literacy Education, UBC

Phone: \_\_\_\_\_.

email: \_\_\_\_\_.

**Dr. Steven Talmy, Associate Professor (Co-Supervisor)**

Department of Language & Literacy Education, UBC

Phone: \_\_\_\_\_.

email: \_\_\_\_\_.

## A.2 Initial Parent Letter



**THE UNIVERSITY OF BRITISH COLUMBIA**  
**Department of Language & Literacy Education**  
**2125 Main Mall, Vancouver, BC, Canada V6T 1Z4**  
**Tel: (604) 822-5788 Tel: (604) 822-3154**

**(Date)**

### **Letter of Invitation and Initial Contact (Parents)**

**Title of study:** An Ethnographic Case Study of the Literacy Practices of English Language Learners within a K-12 Technology-Enhanced Classroom

Dear Parents,

My name is Melanie Wong. I am a [name of city] classroom teacher and also a Ph.D. candidate in the Department of Language & Literacy Education at the University of British Columbia in Vancouver. I am writing to you to let you know about a research study that I am conducting in your child's classroom, and to invite your child to participate in it.

My research explores the different kinds of literacy practices that Grade 5 or 6 English language learners engage in when they are in class. What I mean by "literacy practices" includes the usual reading and writing, of course. But I also mean drawing pictures, making videos, playing music, and using the kinds of technology that can be found in the classroom (for example, computers, iPads, SMARTBoards, websites, online applications like Desire 2 Learn). I am conducting this study because there is not much research about the literacy practices of English language learners in elementary classrooms where a lot of learning technology is used, as is the case in your child's class.

This research has been approved by UBC, by the [School District Name], the school principal, and your child's classroom teacher. I am now asking all the parents in the class for permission to allow their children to participate in the study (even if your child is not an English language learner).

If you agree to allow your child to participate in this study, this is what will happen:

- I will observe the literacy practices that the students in the class engage in during regular classroom hours. I will do my observations two times a week (approximately 3 to 4 hours) with an initial daily two-week observation period.
- I will audio-record some class sessions for the purposes of more in-depth data analysis.
- I will collect copies of selected classwork from students who have been allowed to participate and who also agree to participate in this study. This may include creative and/or school writing, artwork or models, or materials that students create using an

electronic device (e.g., on a computer, on an iPad, using e-portfolios, using Desire 2 Learn).

- I will ask participating students to keep a monthly literacy journal. The literacy journal will provide me an opportunity to understand the literacy activities your child does on a regular basis and what they think about these activities.
- I will interview participating children in a group with their classmates about their thoughts on the classroom literacy practices they engage in. These interviews will be audio recorded so I can use them for data analysis.

I will make every effort not to interrupt classroom instruction because I want to understand what the teacher and students usually do.

I do not believe there is anything in this study that could harm your child. The study does not present any other risks than what would be expected in a daily classroom context. Classroom marks will not be affected if your child participates in this study or does not participate in this study.

There are several potential benefits to the students who participate in this study. First, they will gain a better understanding of themselves as learners. Second, there is the potential that what is learned in this study will impact changes in policies in the school, school district, etc. and this could result in positive benefits for participants' later education.

This study is not related to the [School District Name]. It is being conducted by a doctoral student for the purpose of completing her degree requirements at the University of British Columbia. At no time before or during this study should you or your child feel any pressure from anyone to participate. Your child's participation is voluntary. If you have any questions about your or your child's rights as a participant in this study, you can contact the Research Participant Complaint Line in the UBC Office of Research Services at 604-822-8598 or if long distance, e-mail [RSIL@ors.ubc.ca](mailto:RSIL@ors.ubc.ca) or call toll free 1-877-822-8598.

Your child's identity, your identity, and the school's identity will be kept strictly confidential. However, if there is an example of your child's work that your child is particularly proud of and your child wants to have his/her name included with it, you and your child must give us permission to include your child's name. We want to respect your child's right to claim creative authorship of his/her work.

If you are interested in learning more about any aspect of this study, or would like to volunteer to be a participant, please contact Melanie Wong (co-investigator) by phone at \_\_\_\_\_ or, if you prefer, by email at \_\_\_\_\_.

Best regards,

**Melanie Wong, PhD Candidate**

Department of Language & Literacy Education, UBC

Phone: \_\_\_\_\_

email: \_\_\_\_\_

**Dr. Margaret Early, Associate Professor (Co-Supervisor)**

Department of Language & Literacy Education, UBC

Phone: \_\_\_\_\_

email: \_\_\_\_\_

**Dr. Steven Talmy, Associate Professor (Co-Supervisor)**

Department of Language & Literacy Education, UBC

Phone: \_\_\_\_\_

email: \_\_\_\_\_

### A.3 Administrator Consent Form



**THE UNIVERSITY OF BRITISH COLUMBIA**  
**Department of Language & Literacy Education**  
**2125 Main Mall, Vancouver, BC, Canada V6T 1Z4**  
**Tel: (604) 822-5788 Tel: (604) 822-3154**

**CONSENT FORM – Administrators**  
**An Ethnographic Case Study of the Literacy Practices of English Language Learners**  
**within a K-12 Technology-Enhanced Classroom**

Principal Investigator: Dr. Margaret Early, Associate Professor  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

Co-Investigators: Dr. Steven Talmy, Associate Professor  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

Melanie Wong, PhD Candidate  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

### **PURPOSE**

The purpose of this study is to explore the literacy practices of English Language Learners within a technology-enhanced classroom. With recent advancements in technology, the tools available to make meaning across different modes (i.e. visual, audio, text, etc) are growing. Young children increasingly engage in literacy activities (both inside and outside of the classroom) that are rich, innovative and continue to evolve as new technologies are introduced. The focus of this study is to gain a better understanding of the various literacy practices that English Language Learners engage in within a classroom context where instructional technology (e.g., SMARTBoards, iPads, Desire 2 Learn) are in frequent use.

## **PROCEDURE**

If you agree to allow your school to be used as a research site, I will choose one Grade 5 or Grade 6 classroom where instructional technology is regularly used. I will observe the classroom for the remainder of the 2014-15 school year during regular classroom hours, twice a week for approximately 3-4 hours, with an initial intensive two-week visit when I will attend classes every day. My research activities will consist of the following:

- I will observe the literacy practices that the students in the class engage in during regular classroom hours. I will do my observations two times a week (approximately 3 to 4 hours) with an initial daily two-week observation.
- I will audio-record some class sessions for the purposes of more in-depth data analysis.
- I will collect copies of selected classwork from students who have been allowed to participate and who also agree to participate in this study. This may include creative and/or school writing, artwork or models, or materials that students create using an electronic device (e.g., on a computer, on an iPad, using e-portfolios, using Desire 2 Learn).
- I will ask participating students to keep a short monthly literacy journal. The literacy journal will provide me an opportunity to understand the literacy activities the students do on a regular basis and what they think about these activities.
- I will interview participating children in a group with their classmates about their thoughts on the classroom literacy practices they engage in. These interviews will be audio recorded so I can use them for data analysis.
- I will interview the participating teacher between two and four times.

I will make every effort not to interrupt classroom instruction because I want to understand what the teacher and students usually do.

As a school administrator, I would also like to interview you regarding the school vision, school goals and background knowledge about the school context. Interviews would be recorded and you would have the option of reviewing the audio recording and/or transcript.

I will seek consent from the parents of students in the selected classroom in addition to the assent of students themselves to participate in this study.

## **DURATION**

In consultation with the teacher who agrees to participate in this study, classroom observations will be scheduled at mutually agreed-upon times (twice per week for appropriately 3 to 4 hours per week). The duration of the study is for the remainder of the 2014-15 school year.

## **CONFIDENTIALITY**

The identity of the students and your school will be kept strictly confidential. Participants will not be identified by name in any reports of the completed study.

### **DISSEMINATION OF RESEARCH**

I will share what I learn from this study at national and international conferences and publish results in professional and research journals. Reports based on these presentations and articles will be available to all participants.

### **REFUSAL**

Participation in this project is optional. You have the right to refuse to participate or to withdraw your consent to participate at any time.

### **INQUIRIES**

Please do not hesitate to contact Melanie either in person, by e-mail, or by telephone. She is happy to answer your questions about the research at any time.

Melanie Wong, PhD Candidate  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

### **CONCERNS**

If you have any concerns about your rights or treatment as a research subject, you may contact the UBC Office of Research Services and Administration at (604) 822-8598. If you have any questions about the study, contact the investigators: Melanie Wong \_\_\_\_\_, melanie@melaniewong.ca and/or Dr. Margaret Early, \_\_\_\_\_, \_\_\_\_\_ and/or Steven Talmy, \_\_\_\_\_, \_\_\_\_\_.

### **CONSENT**

Your signature below indicates that you have read the information above, understand that your participation in this research is voluntary, and that you have freely and willingly consented to participate in this research project. Your signature also indicates that you have received a copy of this consent form for your own records. You may withdraw your consent at any time without any consequences to your employment or professional standing.

SIGNATURE

1.)  I consent to participate in this study.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

2.)  I consent to having my voice used in connection with any sharing of the research findings in audio form.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## A.4 Teacher Consent Form



**THE UNIVERSITY OF BRITISH COLUMBIA**  
**Department of Language & Literacy Education**  
**2125 Main Mall, Vancouver, BC, Canada V6T 1Z4**  
**Tel: (604) 822-5788 Tel: (604) 822-3154**

**CONSENT FORM – Teacher**  
**An Ethnographic Case Study of the Literacy Practices of English Language Learners**  
**within a K-12 Technology-Enhanced Classroom**

Principal Investigator: Dr. Margaret Early, Associate Professor  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

Co-Investigators: Dr. Steven Talmy, Associate Professor  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

Melanie Wong, PhD Candidate  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_

### **INVITATION AND STUDY PURPOSE**

You are invited to take part in this research study. The purpose of this study is to explore the literacy practices of English Language Learners within a technology-enhanced classroom. With recent advancements in technology, the tools available to make meaning across different modes (i.e. visual, audio, text, etc) are growing. Young children increasingly engage in literacy activities (both inside and outside of the classroom) that are rich, innovative and continue to evolve as new technologies are introduced. The focus of this study is to gain a better understanding of the various literacy practices that English Language Learners engage in within a classroom context where instructional technology (e.g., SMARTBoards, iPads, Desire 2 Learn) are in frequent use.

## **STUDY PROCEDURES**

The entire study is expected to take the remainder of the school year. If you agree to participate, this is what will happen:

- I will observe the literacy practices that the students in the class engage in during regular classroom hours. I will do my observations two times a week (approximately 3 to 4 hours) with an initial daily two-week observation. I would negotiate with you about when and how these observations are conducted to ensure that the times selected are acceptable with you.
- I will audio-record some class sessions for the purposes of more in-depth data analysis.
- I will collect copies of selected classwork from students who have been allowed to participate and who also agree to participate in this study. This may include creative and/or school writing, artwork or models, or materials that students create using an electronic device (e.g., on a computer, on an iPad, using e-portfolios, using Desire 2 Learn).
- I will ask participating students to keep a short monthly literacy journal. The literacy journal will provide me an opportunity to understand the literacy activities your students do on a regular basis and what they think about these activities.
- I will interview participating children in a group with their classmates about their thoughts on the classroom literacy practices they engage in. These interviews will be audio recorded so I can use them for data analysis.
- I will interview you, the classroom teacher, two-four times over the duration of the study for your perspectives on the literacy practices your students engage in.

I will make every effort not to interrupt classroom instruction because I want to understand what you and your students usually do.

## **DURATION**

The study will last for the remainder of the school year. Your classroom will only be observed during mutually agreed times (appropriately 3 to 4 hours per week) with an initial two week daily visit. If you agree, classroom activities will be audio taped. Interviews with you will be 60 minutes.

## **CONFIDENTIALITY**

The identity of your students, you, and your school will be kept strictly confidential. Subjects will not be identified by name in any reports of the completed study.

## **POTENTIAL RISKS OF THE STUDY**

I do not believe there is anything in this study that could harm you. The study does not present any other risks than what would be expected in a daily classroom context. I am not conducting this study to evaluate you or your teaching. I am interested in how English language learners engage in the literacy practices in your classroom.

**POTENTIAL BENEFITS OF THE STUDY**

There are several potential benefits to the people who participate in this study. First, students will likely gain a better understanding of themselves as learners. Second, there is the potential that what is learned in this study will impact changes in policies in the school, school district, etc. and this could result in positive benefits for education.

**STUDY RESULTS**

I will share what I learn at national and international conferences and publish results in professional and research journals. Reports based on these presentations and articles will be available to all participants.

**REFUSAL**

Participation in this project is optional. You have the right to refuse to participate or to withdraw your consent to participate at any time.

**CONTACT FOR INFORMATION ABOUT THE STUDY**

Please do not hesitate to contact me either in person, by e-mail, or by telephone. I am happy to answer your questions about the research at any time.

Melanie Wong, PhD Candidate  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

**CONCERNS**

If you have any concerns about your rights or treatment as a research subject, you may contact the UBC Office of Research Services and Administration at (604) 822-8598. If you have any questions about the study, contact the investigators: Melanie Wong \_\_\_\_\_, \_\_\_\_\_ and/or Dr. Margaret Early, \_\_\_\_\_, \_\_\_\_\_ and/or Steven Talmy, \_\_\_\_\_, \_\_\_\_\_.

**CONSENT**

Your signature below indicates that you have read the information above, understand that your participation in this research is voluntary, and that you have freely and willingly consented to participate in this research project. Your signature also indicates that you have received a copy of this consent form for your own records. You may withdraw your consent at any time without any consequences to your employment or professional standing.

SIGNATURE

1.)  I consent to participate in this study.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

2.)  I consent to having my voice used in connection with any sharing of the research findings in audio form.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## A.5 Parent Consent Form



**THE UNIVERSITY OF BRITISH COLUMBIA**  
**Department of Language & Literacy Education**  
**2125 Main Mall, Vancouver, BC, Canada V6T 1Z4**  
**Tel: (604) 822-5788 Tel: (604) 822-3154**

**CONSENT FORM – Parents (Child Participation)**  
**An Ethnographic Case Study of the Literacy Practices of English Language Learners**  
**within a K-12 Technology-Enhanced Classroom**

Principal Investigator: Dr. Margaret Early, Associate Professor  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

Co-Investigators: Dr. Steven Talmy, Associate Professor  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

Melanie Wong, PhD Candidate  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_

### **INVITATION AND STUDY PURPOSE**

Your child is invited to take part in this research study. The purpose of this study is to explore the literacy practices (reading, writing, drawing, making videos, computer-based, etc.) that Grade 5 or Grade 6 English language learners (ELLs) do in a classroom where different types of instructional technology are commonly used (for example, SMART boards, iPad, iPod, Desire 2 Learn). With different types of instructional technology available, students can show what they know in different ways. For example they might write a story, draw pictures, use an iPad app to create a presentation, and so on. The focus of this study is to gain a better understanding of the various literacy experiences that ELLs engage in, within a classroom that has different types of technology available. I am asking all children in this classroom to participate, so even if your child is not an English language learner, I would like them to participate in the study.

## **STUDY PROCEDURES**

The entire study is expected to take the rest of the school year. This study will involve the following aspects:

- I will observe the literacy practices that the students in the class engage in during regular classroom hours. I will do my observations two times a week (approximately 3 to 4 hours) with an initial daily two-week observation period.
- I will audio-record some class sessions for the purposes of more in-depth data analysis.
- I will collect copies of selected classwork from students who have been allowed to participate and who also agree to participate in this study. This may include creative and/or school writing, artwork or models, or materials that students create using an electronic device (e.g., on a computer, on an iPad, using e-portfolios, using Desire 2 Learn).
- I will ask participating students to keep a monthly literacy journal. The literacy journal will provide me an opportunity to understand the literacy activities your child does on a regular basis and what they think about these activities.
- I will interview participating children in a group with their classmates about their thoughts on the classroom literacy practices they engage in. These interviews will be audio recorded so I can use them for data analysis.

I will make every effort not to interrupt classroom instruction because I want to understand what the teacher and students usually do.

## **DURATION**

The study will last for the remainder of the school year. Classroom observations will take place two times a week, 3-4 hours each, with an initial two week daily visit.

## **CONFIDENTIALITY**

Your child's identity and school will be kept strictly confidential.

## **POTENTIAL RISKS OF THE STUDY**

I do not believe there is anything in this study that could harm your child. The study does not present any other risks than what would be expected in a daily classroom context. Classroom marks will not be affected if your child participates in this study or does not participate in this study.

## **POTENTIAL BENEFITS OF THE STUDY**

There are several potential benefits to the students who participate in this study. First, they will gain a better understanding of themselves as learners. Second, there is the potential that what is learned in this study will impact changes in policies in the school, school district, etc. and this could result in positive benefits for participants' later education.

## **STUDY RESULTS**

I will share what I learn at national and international conferences and publish results in professional and research journals. Reports based on these presentations and articles will be available to all participants.

## **REFUSAL**

Your child has the right to refuse to participate at any time; it is not a problem if your child does not wish to be interviewed, observed, or recorded. The class and your child's grades will not be affected in any way if your child participates or does not participate in this study.

## **CONTACT FOR INFORMATION ABOUT THE STUDY**

Please do not hesitate to contact Melanie either in person, by e-mail, or by telephone. She is happy to answer your questions about the research at any time.

Melanie Wong, PhD Candidate  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

## **CONCERNS**

If you have any concerns about your rights or treatment as a research subject, you may contact the UBC Office of Research Services and Administration at (604) 822-8598. If you have any questions about the study, contact the investigators: Melanie Wong \_\_\_\_\_, \_\_\_\_\_ and/or Dr. Margaret Early, \_\_\_\_\_, \_\_\_\_\_ and/or Steven Talmy, \_\_\_\_\_, \_\_\_\_\_.

**CONSENT**

Your signature below indicates that you have read the information above. You understand that your child’s participation in this research is voluntary, and that you have freely and willingly consented for your child to participate in this research project. Your signature also indicates that you have received a copy of this consent form for your own records. You may withdraw your consent at any time without any consequences.

**SIGNATURE**

1.)  I consent for my child to participate in this study.

Parent’s/Guardian’s Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

2.)  I consent to having my child’s voice to be used in connection with any sharing of the research findings in audio form.

Parent’s/Guardian’s Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## A.6 Student Assent Form



THE UNIVERSITY OF BRITISH COLUMBIA  
Department of Language & Literacy Education  
2125 Main Mall, Vancouver, BC, Canada V6T 1Z4  
Tel: (604) 822-5788 Tel: (604) 822-3154

**ASSENT FORM – Student**  
**An Ethnographic Case Study of the Literacy Practices of English Language Learners**  
**within a K-12 Technology-Enhanced Classroom**

Principal Investigator: Dr. Margaret Early, Associate Professor  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

Co-Investigators: Dr. Steven Talmy, Associate Professor  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

Melanie Wong, PhD Candidate  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_

Hi! My name is Melanie. I am interested in coming to your classroom and doing some research on how Grade 5 students communicate when they are in a classroom where there are a lot of ways to that... for example, in writing, in pictures, with music or movies, on iPads, on Desire 2 Learn, and more.

In order for me to do my research, I need to ask for your permission! So I would like to ask you if you would like to be in my research (I also have to ask your parents, so if you're not sure about any of this, please talk it over with them).

If you (and your parents!) say "yes" to being in my research, this is what will happen:

- **I will come and watch your class.** At first, I will come to your class every day for two weeks. After that, I will come to your class two times a week. When I come to watch your class, I will take notes on

what everyone is doing when they communicate in writing, drawing, on the computer, iPad, and that sort of thing. I won't interrupt your class, so it will be just like usual when I am there.

- **I will make an audio recording of some of your classes.** This is so I can analyse what is happening in class more closely. I will always tell the class first when I am going to do an audio-recording.
- **I will ask to look your classwork and make copies of some of it.** The work that I would make copies of might be artwork, writing, models, or something you did on the computer, in Desire 2 Learn, on an iPad, and things like that.
- **I will interview you with a group of your classmates.** I would like to hear what you think about the ways you are allowed to communicate in your class. I will audio-record these interviews, too. I will make sure these interviews do not happen when you are doing something important in class.
- **I will ask you to keep a journal of how you communicate.** You will get to choose how you do this. This activity will help me get to know you better.

### **HOW LONG WILL THE RESEARCH BE?**

The research will last for the rest of the school year. I will observe your classroom for a full two weeks and then come two times a week for the rest of the year.

### **CONFIDENTIALITY (YOUR PRIVACY)**

I will talk and write about this research, but whenever I do, your identity will be kept a secret. You and your school will not be named in anything I say or write about this study.

### **IS THIS DANGEROUS?**

I do not think there is anything in this study that is dangerous or could hurt you. Being in this research will be a lot like being in class when I am not there.

### **WILL THIS BE GOOD FOR ME?**

There are some good things that could happen for being in my research. You might learn more about yourself as a student. You might learn different things about ways you can communicate. Other people might also learn from the experiences of you and your classmates.

### **STUDY RESULTS**

I will share what I learn at national and international conferences and I will publish results in professional and research magazines. I will also make a version of my results available for you!

**IF I SAY ‘NO’**

You can decide to say ‘no’ to being in my research at any time. Your class marks will not change if you say ‘no’ to being in my research. Your class marks will not change if you say ‘yes’ either!

**CONTACT FOR INFORMATION ABOUT THE STUDY**

If you ever have questions about my research, contact me either in person, by e-mail, or by telephone. I am happy to answer your questions any time.

Melanie Wong, PhD Candidate  
Department of Language & Literacy Education, UBC  
Phone: \_\_\_\_\_  
email: \_\_\_\_\_

**CONCERNS**

If you have any concerns about your rights or treatment as a research subject, you may contact the UBC Office of Research Services and Administration at (604) 822-8598. If you have any questions about the study, contact the investigators: Melanie Wong \_\_\_\_\_, \_\_\_\_\_ and/or Dr. Margaret Early, \_\_\_\_\_, \_\_\_\_\_ and/or Steven Talmy, \_\_\_\_\_, \_\_\_\_\_ .

**ASSENT**

Your signature below indicates that you have read the information above. You understand that your participation in this research is voluntary, and that you have freely and willingly assented to participate in this research project. Your signature also indicates that you have received a copy of this assent form for your own records. You may withdraw your assent at any time without any consequences.

SIGNATURE

1.)  I assent to participate in this study.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

2.)  I assent to having my voice used in connection with any sharing of the research findings in audio form.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_