

**COMMUNITY-BASED MATERIALS DEVELOPMENT: USING DIGITAL
STORYTELLING FOR TEACHING AND LEARNING INDIGENOUS LANGUAGES**

by

Keeley Ryan

B.A. The University of British Columbia, 2006

B.Ed. The University of British Columbia, 2007

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Abstract

This study examined the potential of using digital storytelling as a mechanism for materials development and Indigenous language learning. Study participants (N = 4) were interviewed after a series of three digital storytelling workshops offered in a First Nations community. The findings of the study support the use of digital storytelling for both materials development and documentation purposes. Digital stories have the potential to be employed to support Indigenous language learning in a number of domains. The highly portable nature of the stories may bring language learning out of the classroom and into other spaces, reducing barriers to language learning for individuals living outside of their home communities. Moreover, the process of creating digital stories also holds possibilities for teaching and learning Indigenous languages. For example, developing the text required that participants use complex literacy skills, such as translinguaging (García, 2009). Brayboy et al. (2011) have asserted that knowledge is created through relationships with ourselves, others, and the world around us. Digital storytelling is a reflection of this epistemology, as it is grounded in relationality; participants built relationships with each other, community knowledge keepers, and the community and territory over the course of the digital storytelling workshops.

Preface

This thesis is the original, unpublished work of the author, Keeley Ryan. The UBC Behavioural Research Ethics Board approved the fieldwork reported in this study under certificate #H14-00417.

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Glossary

Aboriginal: In this paper, I use the definition set out in the *Constitution Act*. Under the *Act*, the term Aboriginal is defined as a collective name for the original peoples of Canada, including the Inuit, Métis, and Indian peoples of Canada (*Constitution Act, 1982*). In the glossary, the term Indian is used strictly in reference to the legal identity of certain First Nations peoples in Canada.

Band: The paper uses the term Band to describe a legal, political entity. As such, Band is defined in reference to the *Indian Act* (1985). According to the *Act*, a Band is “a body of Indians for whose use and benefit in common, lands, the legal title to which is vested in the Crown, have been set apart before, on, or after September 4, 1951, for whose use and benefit in common, moneys are held by the Crown, or declared by the Governor in Council to be a band for the purposes of this Act.”

Digital Storytelling: As conceptualized by Lambert (2002) and Shelby-Caffey, Úbéda, and Jenkins (2014), digital storytelling involves combining narrative with digital content, such as audio, video, and images.

First Nation: A political term that refers to a Band, a community, or a larger tribal collective. The term emphasizes the inherent right of Aboriginal peoples to self-determination and jurisdiction over the Nation’s territories and peoples.

First Nations: The term First Nations is used to describe the original peoples of Canada who are neither Inuit nor Métis. First Nations peoples may or may not have Indian Status, as defined by the *Indian Act*. First Nations is used as a general term: when an individual’s First Nation is known, the person will be described as a member of that Nation.

Indigenous: A term that includes Aboriginal groups on a global level. Although each Indigenous community is unique and distinct, the majority of communities have experienced displacement and marginalization through the settlement of their territories by outsiders.

Multimedia: The technologies used to combine a variety of content forms, including audio, visual, text, and interaction, to communicate.

Multimodal: The way by which multimedia texts are used to improve communication. If multimedia implies form; multimodal implies process.

Revitalization: Language revitalization describes the process by which a community attempts to stop and/or reverse declining numbers of speakers of a particular language. Some communities may work to create new speakers of languages that are no longer spoken. Language revitalization projects are associated with Indigenous communities, where social, political, and economic factors have resulted in a shift from the Indigenous language to the national language.

Settler: This term is used to describe individuals, and their descendants, who have relocated to the lands of Indigenous peoples. Settlers tend to dominate the Indigenous peoples socially, economically, and politically, sometimes unintentionally. Settlers profit from the annexation of Indigenous lands, regardless of when the territory was initially colonized. In this paper, the term is inclusive of all ethnicities and socioeconomic statuses.

Technology: Technology is used to refer to machinery, devices, and programs developed through scientific inquiry. Technology includes computer hardware, communications devices, software, social media, networks, etc.

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Dedication

To Nan, who took me to the library.

Chapter 1: Introduction

When I entered the Master of Arts program in Language and Literacy Education, in 2011, I had no idea that my studies would lead me to completing a research project with First Nations directed at supporting the community's language revitalization efforts. In fact, I didn't even know that language revitalization initiatives were occurring in almost every First Nation across the province of British Columbia. My first semester, I enrolled in Dr. Candace Galla's class, Languages of Native North America, and my mind was opened to a field of language education to which I was immediately drawn. I switched supervisors and volunteered with the Languages Manager, Curtis Rattray, at the First Nations Education Steering Committee (FNESC). Curtis was welcoming and willing to share his expertise with me. The highlight of my volunteer experience was working with Curtis to develop lesson templates for teachers.

Through the volunteering experience, I was exposed to challenges that First Nations language teachers face across the province, namely few resources in every imaginable area. There are limited numbers of teachers who are fluent speakers; in fact, many are learning the languages alongside their students. There may be few support staff in the schools, leaving the teacher alone to teach the language from kindergarten through grade 12. Curriculum may be nonexistent or inadequate, as in the case of the First Nations Languages template IRP, developed out of the French language curriculum from the 1990s. Teachers may not have access to texts, audio, and video recordings of the language to share with the students, as the languages are under-resourced. Elders in the community, who are typically the fluent speakers, often are involved in numerous language revitalization projects, restricting the amount of time that they are available to support classroom teachers. Finally, there are limited funds available to develop supports that could alleviate the situation that classroom teachers face.

I wanted to do something to support teachers. I am not a linguist, limiting my usefulness for documentation work. I am not a First Nations person, and my knowledge of First Nations cultures and languages is extremely limited, so generating content was also out of the question. My contribution is limited to general applications related to language instruction, such as developing lesson templates and materials that can be adapted by language teachers to meet the needs of their communities. The research project described in this paper is an example of the type of language revitalization work that I feel is appropriate for me to undertake, as a descendant of settlers to Canada. I hope that the materials developed through this project will be useful for communities across the province that are working on bringing their languages back into their homes.

1.1 Researcher Positionality

As mentioned above, I am the descendant of settlers to Canada. My father's ancestors immigrated to eastern Canada from Ireland in the early 20th century. My father grew up in Montréal, in the traditional territories of the Kanien'kehá:ka (Mohawk). He is bilingual in English and French, having worked in the city before moving to the west coast as an adult. My mother was born in New York City, the traditional territory of the Lenape (Delaware). My mother's family is from Puerto Rico, so my mother also grew up in a bilingual environment, speaking Spanish and English. My family moved to the west coast in the 1970s, and I was born in Vancouver in 1983. I grew up in White Rock, on the unceded territory of the Semiahmoo First Nation, and have spent most of my life living, working, and learning on Coast Salish Territories. Although my roots are not in this city, for me it is home, and I find myself drawn back to it no matter where I am.

I have done all of my post-secondary education at the University of British Columbia (UBC). After completing the teacher education program in 2007, I moved around, teaching in both urban and rural (reserve) settings. I came back to Vancouver in 2009 and began working for the Vancouver School Board as an adult educator, teaching English 11 and 12 and Social Studies 11 to learners who were working towards their Adult Dogwood Diploma, and graduated adults who required upgrading before attending post-secondary education. At the end of the second year of my program, I received devastating news: due to budget cuts, I was being laid off. Although I was able to stay on as a teacher-on-call, I lost my continuing hours. In order to continue my studies and live in Vancouver, I needed a steady source of income.

I began working at FNEESC, the organization where I had previously volunteered in the languages department, in a different area—post-secondary education and training. Through this job, I began working with individuals who were instrumental in the development and completion of the research project. Although the work at FNEESC was rewarding, it was overwhelming. I realized that it would be difficult to complete my degree if I stayed at the organization. The 2014 Indigenous Adult and Higher Education Conference was one of my final tasks at FNEESC. At the conference, I ran into an education worker from Mt. Currie with whom I had had extensive contact through the post-secondary helpline at FNEESC. I let her know that I was leaving the organization to focus on my schooling. We had worked frequently with each other and had a good rapport. We talked about my research, and when she heard that I didn't have a research site, she suggested that I do my research with her school, Ts'zil, which offered adult language courses. It sounded like a great idea, and we began discussing the project with the Ts'zil School Board and the Lílwat Language Authority.

The first steps involved completing the Lílwat First Nation's research approval process. I received the first level of approval quickly, but the Language Authority, which needed to provide the final approval, was completely swamped. By the time approval came through, it was too late in the term to begin with the adult language class.

The Language Authority was interested in continuing the project, so the possibility of a language workshop held in the community was floated. It would be open to adult students in the language class and other community members who were interested. I thought that it sounded interesting, and we began to develop the project through conversations that included the education coordinator, the Ucwalmícwts language instructor, and a member of the Language Authority. In order to protect Lílwat intellectual property, the research aspect of the project was structured around the processes of the workshop, rather than the product. The education coordinator took the lead with regards to structuring the workshop and recruiting participants in conjunction with the Language Authority.

1.2 Research Questions

Presently, Ts'zil Learning Centre and Lílwat7úl Culture Centre are using multimedia technologies such as audio recordings and an interactive website in the community's language revitalization initiatives. Through our discussions, it was decided that the language workshops would be structured around the creation of digital stories. Lílwat selected this medium for two reasons: to document the language, and to develop language materials that could be used by teachers in the community and learners at home. I was interested in examining the language used as participants created the story; for instance, I wondered whether participants would

consistently speak in Ucwalmícwts during the story development process. I had the sense that the digital storytelling workshop would have potential as a way to document the language and develop language materials for language revitalization purposes. I was unsure of what the potential of digital stories would be for language pedagogy.

The broad research question that I developed for this project is: What is the potential of a digital storytelling workshop for Indigenous language revitalization efforts?

This was further narrowed to these questions:

- A. How do the technological processes of the workshop intersect with the language learning processes? How is materials development impacted when technology is introduced?
- B. How does community-based language materials production impact language learning and meaning making?

1.2.1 Significance of the Study

Galla (2010) asserted that “very little has been written and published specifically about the use of technology for language revitalization purposes” (p. 33). Available research tends to be focused on larger language communities, with speakers numbering in the tens of thousands (see, for example, Warschauer, 1998). In British Columbia (BC), research on technology and language revitalization has focused largely on the impact of First Voices (see Godfrey, 2008; Moore & Hennessy, 2006) on language revitalization at the community level. Few case studies investigating the use of technologies within a teaching and learning environment exist (see Hermes, Bang, & Marin, 2012).

This study demonstrates how digital stories can be used for the purposes of teaching Indigenous languages. Through the process of developing the story, learners engage in complex literacy practices, using dynamic processes and multiple modes of understanding to create

meaning. The multimedia nature of the digital story allows learners to engage with the language through oral language and images, with the addition of written language for support. The primacy of oral language in the digital story supports learners' listening and speaking skills development, and it brings the voices of speakers into the home and wherever else the learner interacts with the text. Learners hear the language and use the images to make meaning. The text serves as reinforcement; learners can visualize how the sounds of the language connect with the form of the words. Through repetition, learners can isolate the sounds of individual morphemes through the audio recording.

Additionally, the study's findings support the utility of digital storytelling for developing language-learning materials in a community setting. Basing materials development in community supports the development of culturally appropriate and relevant resources that are targeted to actual learners and can be used to scaffold community language revitalization goals. Further, developing materials in community creates a context where the community maintains ownership, access, control, and possession of the intellectual property contained in the materials.

The implications of this research are most useful for those working in teaching and supporting learners of under-resourced languages, in both classroom and community-based settings.

1.2.2 Organization of the Thesis

There are six chapters in the thesis. Chapter Two includes a discussion of the theoretical frameworks, as well as a review of relevant literature. Chapter Three describes the research participants and methodology. I describe the community, the language, and the research site, locating the project within the community's language context. The participants are briefly introduced, then I describe my research methods, procedures, data collection, and data analysis.

Chapter Four contains general information about my findings, which are discussed in further detail in Chapter Five. Chapter Six contains a brief summary and describes limitations of the study, implications for teaching and learning Indigenous languages, and suggestions for future research.

Chapter 2: Theoretical Framework and Literature Review

This chapter begins with a discussion of the five theoretical frameworks from which I draw to various extents. I situate myself as a non-Indigenous researcher working in collaboration with an Indigenous community, participating in community-based research. The concept of design-based research is explained, with reference to its applicability to research in an Indigenous community setting. I also relate informed grounded theory to the process by which the literature review was developed. Finally, multiliteracies are introduced as designs of meaning. The literature review contextualizes Indigenous language teaching and learning in British Columbia, with reference to language teaching and learning efforts globally. The chapter continues with a review of research on using technology for Indigenous language revitalization in Canada and the United States. It concludes with an introduction to digital storytelling (DS), and identifies differences between DS in Indigenous and settler contexts.

2.1 Theoretical Framework

The research has been informed by a number of theoretical frameworks. Although I am not in a position to undertake Indigenous research methodologies, as the descendant of settlers to Coast Salish territories, the writings of Indigenous scholars have influenced the design of the study, interactions with facilitators and participants, as well as analysis of the data. A larger influence on the design of the Place Names Project itself is design-based research. The design of the study draws heavily from the work of Indigenous scholars Hermes, Bang, and Marin around Ojibwe language materials development. Over the course of the study, I found myself reading, listening, and questioning in an attempt to understand the meanings of the conversations that the participants had shared with me. Informed grounded theory (Thornburg, 2012) informed the research process, allowing me the freedom to consider various theories, drawing from a number

of sources while continually adding to the literature review. Finally, the concept of multiliteracies (New London Group, 1996) provided a framework for understanding the literacy practices of participants in the material development workshop.

2.1.1 Decolonizing Methodologies

Linda Smith (1999) identified three characteristics of research: it satisfies a need to know, it extends the boundaries of existing knowledge, and it is a process of systematic inquiry. Indigenous scholars (Alfred, 2005; Battiste, 2013; Smith, 1999) have problematized the ideologically laden nature of research, examining whose knowledge and processes are privileged in the interactions between communities and academia. Research with Indigenous peoples has often served as an agent of colonialism—constructing Indigenous peoples as deficient, and adding distorted interpretations of Indigenous realities to the corpus. Frequently, asymmetrical power relations are reflected in the content, structure, and interpretation of the research. The researcher defines the questions, develops the project to satisfy criteria established by the researchers' institution, and analyzes data through an ethnocentric lens. Moreover, this research typically does not extend the knowledge of the people or community who are the basis of the study, and the research subjects often have little control over how information is used or presented.

A number of more appropriate approaches to research have been developed by Indigenous scholars in response to the problems described above. Graham Smith's (1992) power-sharing model provides a framework for the development of this project. In this model, "researchers seek the assistance of the community to meaningfully support the development of a research enterprise" (L. Smith, 1999, p. 177). This approach to research is reciprocal and relational; research questions are developed to increase knowledge within the community, and

the relationship between the researcher and the community extends beyond the end of the study date. Brayboy, Gough, Leonard, Roehl, and Solyom (2011) built on Graham Smith's model, defining critical Indigenous research methodologies as grounded in relationality, responsibility, respect, and reciprocity.

The adaptation of a power-sharing model is not enough however; Linda Smith (1999) reiterated the need for researchers to recognize power dynamics embedded in research relationships. Researchers interpret results through ideological frameworks. When these frameworks are unexamined, there is a potential to overlook, exaggerate, or distort data, based on assumptions and misunderstandings. This challenge is inherent to all research, not just research with Indigenous peoples. The need for critical reflection in all areas of the research is reiterated in much of the literature on research and Indigenous peoples.

Despite efforts to develop culturally appropriate research approaches, a critical issue within decolonizing research involves the challenge of reconciling fundamentally different systems of knowing. Alfred (2005) asserted:

It is impossible either to transform the colonial society from within colonial institutions or to achieve justice without fundamentally transforming the institutions of the colonial society themselves.

Attention has been directed towards making changes, particularly in the area of research processes. For example, the Tri-Council (the Canadian Institutes of Health Research [CIHR], the Natural Sciences and Engineering Research Council of Canada [NSERC], and the Social Sciences and Humanities Research Council [SSHRC]) has devoted a chapter of its policy for research involving the First Nations, Inuit, and Métis Peoples of Canada (2014). While reforming

research processes is important, institutional challenges around ownership and application of Indigenous knowledge remain.

2.1.2 Design-Based Research Methodology

This study is informed by design-based research methodology (DBR). Brown (1992) developed DBR in order to address the need for “new and complex methodologies to capture the systemic nature of learning, teaching, and assessment” (p. 174) in the classroom. In her work to transform learning environments, Brown found that it was necessary to “engineer innovative educational environments and simultaneously conduct experimental studies of those innovations” (p. 141).

DBR addresses issues central to the study of learning, including the following:

- The need to address theoretical questions about the nature of learning in context.
- The need for approaches to the study of learning phenomena in the real world, rather than the laboratory.
- The need to go beyond narrow measures of learning.
- The need to derive research findings from formative evaluation. (Collins, Joseph, & Bielaczyc, 2004, p. 16)

DBR also has limitations:

- Difficulties arising from the complexity of real-world situations and their resistance to experimental control.
- Large amounts of data arising from a need to combine ethnographic and quantitative analysis.
- Comparison across designs. (Collins, Joseph, & Bielaczyc, 2004, p. 16)

Hoadley (2004) characterized DBR as a methodology rooted in iteration and replication. Designs are structured based on prior designs; accordingly, the structure of this research project was informed by Hermes, Bang, and Marin's (2012) case study of Ojibwe language materials production in a community setting. Using DBR, researchers can make comparisons across designs—in this case, materials development in a Lílwat community versus materials development in an Ojibwe community.

Wang and Hannafin (2005) identify the development of contextually sensitive design principles and theories as a strength of DBR. Indigenous language revitalization projects are highly context specific. Indigenous languages are linked to specific peoples and territories, and to particular ways of being and knowing. Communities have had differing experiences of language shift and language revitalization. The research may potentially inform the design of future Lílwat language workshops, and other language communities can adapt the design based on their particular contexts, should they choose to do so.

Anderson and Shattuck (2012) referred to DBR in jest as “research through mistakes” (p. 17). In the context of this research, a methodology that allows for iterative adjustments was imperative. As will be described in Chapter Three, a number of adjustments were required over the course of the workshop. DBR's allowance for adaptation and error aligned with the community-centred approach to the research. A methodology that allows for error and adaptation is a good fit for this purpose. Furthermore, the temporal problems often associated with this type of project are less of an issue for a graduate student; since I may continue my studies in the future, this particular design can serve as a model for future research.

2.1.3 Informed Grounded Theory

Thornberg's (2012) informed grounded theory "refers to a product of a research process as well as to the research process itself, in which both the process and the product have been thoroughly grounded in data by GT [grounded theory] methods while being informed by existing research literature and theoretical frameworks" (p. 240). Thornberg rejects the tabula rasa positioning of the researcher in GT, using both inductive and abductive logic during the research, ensuring critical awareness of the researcher's historical, ideological, and sociocultural positioning. Essential features of informed GT include theoretical agnosticism, theoretical pluralism, ongoing literature review, staying grounded, theoretical playfulness, creating memos, and constant reflexivity. This approach allows the researcher to learn from pre-existing knowledge, while remaining creative, flexible, and sensitive.

Informed GT as a methodology allowed for an iterative process for the development of the literature review, in addition to the process of data analysis. Because the researcher maintains a position of openness and pluralism, I was able to build on my understanding through additional readings, coursework, and peer interaction. Rather than orienting the research around a product, the thesis, I was able to see my work as a process, enabling me to move forward with the work.

2.1.4 Multiliteracies

Information technology is playing an ever-increasing role in Indigenous language and literacy planning processes. According to McCarty (2013), literacy, in particular multiliteracies, shows potential in both research and practice to serve as an agent of language revitalization. This study is framed around the concept of multiliteracies (New London Group, 1996). The construct of multiliteracies contrasts with older understandings of literacy, centred around the construct of a stable, single, rule-based, correct, national form of language that can be mastered. A pedagogy

of multiliteracies “focuses on modes of representation much broader than language alone. These differ according to culture and context, and have specific cognitive, cultural, and social effects” (Cope & Kalantzis, 2000, p. 5), allowing for multiple modes of meaning making and integration, while providing room for the paradox of increasing discourses of diversity and global connectedness through technology.

Central to the construct of multiliteracies is the social, multiple, and multimodal aspect of language. As new spaces for representation emerge (blogs, digital stories, social media, text messages, etc.), new literacies emerge, along with new social practices. Cope and Kalantzis (2009) theorized that these social practices have led to new ways of identity, personality, participation, and citizenship. According to the researchers, new media have changed the way individuals experience the world around them.

Galla (2010) applied the framework of multiliteracies to her study of Indigenous language revitalization and technologies, adding an additional component, situated learning, to the multiliteracies pedagogy of situated practice, overt instruction, critical framing, and transformed practice (New London Group, 1996). Situated learning captures “the conscious acquisition of knowledge and skills” (Galla, 2010, p. 61), an important factor to consider when working with Indigenous communities, as access to multimedia technologies may be limited for reasons of geography and infrastructure, and Elders, who often are employed as Indigenous language teachers, may be new users of these technologies.

The research methodology draws from what Cope and Kalantzis (2009) categorized as “the ‘What’ of multiliteracies—designs of meaning” (p. 176). The “What” includes available designs, designing, and the redesigned, which will be described in greater detail in Chapter Four. The multiliteracies construct, with the inclusion of situated learning, provides a valuable

heuristic for understanding the literacy practices of the participants during the Materials Development Workshop, as they interacted in Ucwalmícwts and English, creating a project out of various media for the purpose of connecting with community members.

2.2 Literature Review

2.2.1 Language Endangerment

At present, the vast majority of First Nations languages in Canada, with the exception of Inuktitut and Cree, are highly endangered. Most speakers are elderly, and languages are no longer being transmitted in the home from parents to children. Many communities, in both Canada and the United States, have been active in revitalization efforts, implementing school and community language programs (Hinton & Hale, 2008).

At the core, language shift is a reflection of societal power differentials. Within Canada, the residential school was arguably the primary site of language shift. Children were removed from the care of parents or caretakers and sent outside of their territories to schools where they were punished for speaking their languages. McIvor (2012) has contended that residential schools “severed the multigenerational passage of language, [and] weakened children’s connection to their land, their culture, and their people” (p. 25). This, coupled with the enduring psychological and social impacts of colonization through education, resulted in a shift to English in First Nations communities.

Although First Nations communities are gaining control over the education of their children, and many community schools offer programming in an Indigenous language, language loss remains a critical challenge for many communities today. The First Peoples’ Culture Council (FPCC) (2014) identified contemporary factors contributing to language shift: parental and community attitudes promoting English for education and economic reasons; the influence

of media and the Internet; the stigmatization of Indigenous languages by majority language speakers; a lack of qualified teachers, curriculum, and materials; and, most importantly, the lack of concern of provincial and federal policy makers.

Fishman (2001b) provided a succinct overview of why the majority of global languages are under threat: the powerful forces of Western globalization are rapidly altering economic, social, technological, and linguistic contexts on an international scale. The forces of globalization expose systemic inequities, and languages undergo functional changes as they come into contact with other language groups. Fishman (2001a) critiqued the normalization of minority language death, the view that it is a historic inevitability that some languages will grow, while others will fail as their functionality in society changes. This narrow view of language death dismisses the role of power and inequity in language shift.

May (2012) argued that language loss is less a linguistic issue than a power issue. Prejudice, discrimination, subordination, and legislation all play key roles in language death. Tolerability—that is, world language speakers' attitudes towards threatened languages—plays a huge role in Indigenous language revitalization planning. Long-term funding, which is essential to language planning, may be difficult to obtain if majority speakers are unconvinced of the need to support endangered languages with little social, political, or economic utility outside of the particular language community. This limits the availability of resources for communities to maintain or revitalize their heritage languages.

Hinton (2011) described the lack of support available for teachers and learners of American Indian languages and contrasted this with the resources available for majority language instruction. The difference in resources is yet another marker of the power differential that exists between speakers of English in the United States and Canada and speakers of

Indigenous languages. As May (2005) noted, confusing language extinction with language modernization ignores the root of the problem; language extinction never occurs for socially dominant groups in a society.

2.2.2 Language Revitalization and Technology

Galla (2010) has divided language revitalization technology initiatives into three categories: low (emphasizing one sensory mode); mid (bisensory); and high (multimodal interactivity). For the purposes of this literature review, the focus will be on mid-technology initiatives, as the proposed research project fits best within this classification. Mid-technology initiatives are characterized as allowing learners “to receive the Indigenous language through sight and hearing” (p. 82). Examples of mid-technology media include audiobooks and web-based materials, such as *FirstVoices*. The projects described in this section of the literature share the commonality that they were all undertaken with, by, and for members of the Indigenous language community interested in revitalizing its language. Although non-community members and academics may be participants, community goals and wishes are central to the project planning and facilitation processes.

Moore and Hennessy (2006) positioned digital technologies as mechanisms for a realignment of control. Through a mid-technology initiative, the Tagish *FirstVoices* working group was able to apply a distinctive language ideology to the development of the web-based archive, reflecting a holistic conception of language, traditional modes of social interaction, and the centrality of Elders’ knowledge. These ideologies shape both the content of the Tagish *FirstVoices* site as well as the process by which it was developed. The authors concluded that digital technologies facilitate community-based projects, returning to the Indigenous community authority over the development of language materials and projects.

Obonyo, Troy, Baldwin, and Clarke (2011) investigated the potential of another mid-level technology, the Smartpen, for use amongst Myaamia language learners in a home-based setting, since language must be used in the home if revitalization efforts are to prove successful. Most users indicated that the Smartpen and Myaamia booklets had the potential to be an effective learning tool; moreover, the researchers found that older children used the Smartpens and booklets to teach younger siblings in the home. Of particular interest was the authors' finding that Smartpen technology was preferred by users over the Myaamia language website; while the authors did not discuss the reasons behind this, the finding may problematize assumptions underpinning the development of web-based resources for community-based language revitalization projects.

Hermes and colleagues (2012) also examined the potential of community-based language materials production. Rather than approaching language as content, the researchers adapted a second language pedagogy, whereby the target language, Ojibwe, was taught with an emphasis on the sociocultural context. Focusing on the everyday spoken language, rather than selecting a content subject—for example, numbers or colours—community members generated semi-scripted conversations. After conversations were filmed and produced, the recordings and transcripts became the basis of the Ojibwe language learning software, *Ojibwemodaa!*, which was distributed in the community for use in the home. The use of technology in the creation of *Ojibwemodaa!* “opened spaces for the integration of Indigenous epistemologies and axiologies” (p. 396). The authors were critical of the impact of the “epistemological underpinnings of formal education” (p. 397), echoing Alfred (2005). They questioned whether, and how, the content of language revitalization efforts has been driven by educational agendas set out by non-Indigenous

institutions, “as the agenda of formal education in relation to Native people (and the economics and policies that unfold from it) remains fundamentally unchanged” (p. 398).

2.2.3 Community and Academic Responses to Language Endangerment in Canada

The language revitalization movement arises from Indigenous communities’ goals to increase the number of speakers, bring the language into daily use, and expand domains of language use. According to Hinton (2011), “In general, outside experts who work with communities on language revitalization are documentary linguists, theoretical linguists, and linguistic anthropologists” (p. 317). With the research oriented to documentation and conservation efforts, there is a need for research on Indigenous language teaching theory and methodology. Language communities’ orientation to collaborations with linguists to document their languages and develop reference materials is logical in the face of declining numbers of fluent speakers. However, as a result of this orientation, there is a gap in the literature regarding the effectiveness of language revitalization strategies.

The *Report on the Status of B.C. First Nations Languages* (FPCC, 2014) described language revitalization initiatives in British Columbia. There is great linguistic diversity in BC; 34 First Nations languages are spoken, accounting for 60% of the total number of First Nations languages spoken in Canada. Out of a possible 203 communities, the FPCC report included the responses of 185, representing a population of 129,730. Currently, four schools offer immersion programming for children who are of preschool or elementary age. A number of communities offer language programming through preschools or community-operated schools. The FPCC identified language programs for adults and parents as an area of need.

With regard to language resources, 65% of communities have at least one recording of their language, and 52% report having some level of curriculum materials. These findings

indicate that many communities require additional materials for teaching language. Of the communities reporting language recordings, 117 of the 120 communities reported using *FirstVoices* as a language archive. *FirstVoices* is a website that uses digital multimedia technologies to archive First Nations languages, particularly those in BC (Moore & Hennessy, 2006). Each language community can develop a webpage featuring sound files, photographs, videos, and text. *FirstVoices* can be public or private, depending on the preferences of the community's language authority. Based on FPCC's report, it would appear that *FirstVoices* is a resource of considerable importance for the language revitalization efforts of BC First Nations communities.

The FPCC report highlighted a key challenge facing BC First Nations communities wishing to implement language programs: the small population of fluent speakers. At the provincial level, only 4.08% of the reported population self-identified as fluent. A larger proportion, 9.32%, self-identified as semi-speakers. Communities may struggle to identify teachers of their languages, and frequently, the teacher may be a language learner as well. This situation creates a context in which oral language may not be the primary method of language transmission, and teachers and learners are relying on other languages, such as English, to scaffold teaching and learning.

California and BC share similarities with regards to Indigenous language contexts. Both locations are home to a great diversity of languages, many with small speaker populations. For this reason, the work of Leanne Hinton is of particular relevance. Approaches like the Master-Apprentice Program (Hinton, 2007), wherein learners are paired with a fluent speaker and they complete everyday tasks together for extended periods of time, have been hosted in a number of communities across the province. Strategies such as microteaching and total physical response

(Hinton, 2003) have also been implemented by classroom teachers who lack fluency in the target language, with varying degrees of success. While students may gain receptive listening skills and be able to produce basic phrases, the goal of producing fluent speakers through school-based programs has not been achieved. The differing needs of communities determine which programs are implemented, although many communities offer courses in the Indigenous language through the school.

2.2.4 Digital Storytelling

Digital storytelling (DS), broadly defined, involves combining narrative with digital content, such as audio, video, and images (Shelby-Caffey et. al., 2014). Digital stories can be as simple as a series of slides with narration, like the one completed in the Place Names Project, and can increase in complexity to interactive movies with effects and professional-quality audio tracks. DS has been theorized since the turn of the century. Lambert (2002) characterized effective digital stories as having the following seven elements:

1. Point of View
2. Dramatic Question
3. Emotional Content
4. Economy
5. Pacing
6. Voice
7. Soundtrack

The structure of conventional DS was not a perfect fit for the project. For example, the dramatic question element was eliminated. Instead, workshop participants determined a purpose for telling the story: to teach the reader about a particular place in the community. This decision enabled the

composition of a DS for instructional purposes that lacked the conflict and climax requisite in the English storytelling tradition. As an English teacher, I perceive that the constructs of point of view and voice arise from the primacy of the individual in Western values. The project had a community-oriented focus and was a collective project; as a result, the emphasis on individual voice in Lambert's conception of digital storytelling was problematic for the purposes of the research.

Indigenous digital storytelling (IDS) reflects Indigenous ontologies and epistemologies. Iseke and Moore (2011) have contended that IDS “integrates Indigenous stories and sacred places and artifacts in innovative ways, is created by and for Indigenous communities, addresses change, reflects community knowledge and perspectives, and enables negotiation of the community's social priorities” (p. 33). In contrast to DS, where the individual is at the centre of the project, IDS prioritizes the community. It is a collective approach to storytelling. Willox, Harper, and Edge, along with the “My Word”: Storytelling and Digital Media Lab, and the Rigolet Inuit Community Government (2012), characterized IDS as building capacity, inciting dialogue, and enhancing community collaboration and cohesion. Language is central to these above processes, making this particular approach especially suited for Indigenous language teaching and learning projects in community settings.

Chapter 3: Participants and Research Methodology

The purpose of this study was to explore the use of Indigenous digital storytelling as a medium for Indigenous language education. The overarching research question, “What is the potential of a digital storytelling workshop for Indigenous language revitalization efforts?” was subdivided into three, more focused, questions:

- A. How do the technological processes of the workshop intersect with the language learning processes? How is materials development impacted when technology is introduced?
- B. How does community-based language materials production impact language learning and meaning making?

I begin with a description of the participants, followed by a discussion of the research setting. Information about the language, Ucwalmícwts, and a discussion of its current usage in the community follow. The materials development workshop is discussed, both in its planned form, as well as in its final iteration. The chapter ends with an overview of the data collection and analysis methods I employed.

3.1 The Participants

Without the support and efforts of the participants listed in Table 1, this study would never have happened. From guiding me through the approval process to facilitating workshops, these individuals went above and beyond what I thought possible. In this chapter, I refer to these participants and describe their activities during the workshop series. The interview process with each participant is summarized. All individuals are referred to by pseudonyms in order to protect confidentiality. Data related to participants’ language speaker characteristics, use of language for speaking purposes, and use of language for thinking purposes were self-reported by participants

at the time of the interviews. Data were collected on a one-page multiple-choice form (see Appendix A), and participants indicated their desired pseudonym at the top of the form.

Table 3.1 Self-Reported Language Proficiency and Practices

Participant Name	Ucwalmicwts Proficiency	Workshop Language Use: Speech	Workshop Language Use: Thought
Saw7	<ul style="list-style-type: none"> • Proficient speaker: Can carry on a conversation, listen and speak to a variety of speakers and learners, and use the language in a variety of settings (school, community, home) and contexts (formal/informal). • First exposed to Ucwalmicwts in the home. • Most comfortable speaking Ucwalmicwts. • Very comfortable using Ucwalmicwts. • Aged 60 or better. 	<ul style="list-style-type: none"> • Primarily Ucwalmicwts. • English when discussion related to creating the story (i.e., PowerPoint vocabulary). 	<ul style="list-style-type: none"> • Primarily Ucwalmicwts.
Abra	<ul style="list-style-type: none"> • Advanced: Can carry on simple conversation, listen, and speak to a variety of speakers and listeners. • First exposed to Ucwalmicwts in the community. • Most comfortable reading and writing in Ucwalmicwts. • Neutral using Ucwalmicwts. • Prefers not to disclose age. 	<ul style="list-style-type: none"> • Primarily English. • Ucwalmicwts when discussing story text. 	<ul style="list-style-type: none"> • Some Ucwalmicwts, mostly English.
Pilar	<ul style="list-style-type: none"> • Beginner: Can recognize words and can use and respond to basic phrases. • First exposed to Ucwalmicwts in the community. • Most comfortable listening in Ucwalmicwts. • Very uncomfortable using Ucwalmicwts. • In the 41–50 age bracket. 	<ul style="list-style-type: none"> • Majority English. • Used a blend of both languages when discussing the story. 	<ul style="list-style-type: none"> • English.
Bridget	<ul style="list-style-type: none"> • Intermediate: Comfortable speaking things that have been practiced; greetings, basic conversations, simple responses. Less comfortable “speaking on the spot.” • First exposed to Ucwalmicwts in the home. • Most comfortable listening in Ucwalmicwts. • Neutral using Ucwalmicwts. • In the 41–50 age bracket. 	<ul style="list-style-type: none"> • Primarily English. • Ucwalmicwts when discussing story text. 	<ul style="list-style-type: none"> • Even division between Ucwalmicwts and English.

3.2 The Land

On March 14, 2015, the majority of eligible Lílwat Nation citizens voted against a proposed land code (Lílwat Nation, 2015). By voting against the code, the community indicated

that it was unwilling to settle solely for control of reserve lands. The Lílwat have never ceded sovereignty over their traditional territory, and their Aboriginal title to the territory has never been extinguished. Currently, Lílwat has 3,000 hectares of reserve lands set aside by Canada. The reserve lands are but a tiny fraction of the roughly 800,000 hectares that comprise their traditional territory (Coast, 2015).

Today, the Lílwat Nation's 10 reserves are located in the area known as the Pemberton Valley. The Lillooet River snakes across the broad valley before draining into Lillooet Lake. The valley is surrounded by the Coast Mountains, which remain snow-capped for much of the year. Because the area is located farther away from the coast than Vancouver, it experiences a different climate; summers tend to be hot and dry, while winter temperatures are colder than in Vancouver. The area around the reserves is quite swampy; a research participant told me informally that the community historically was centered in a much nicer area, Pemberton Meadows, but had been relocated by the government in order to open up farming for settlers.

The research and interviews took place largely in Mt. Currie. The beauty of this area is indescribable. Vegetation is every shade of green imaginable, and the mountains can be seen no matter where you are. Although the area is somewhat developed, I saw black bears roaming in fields a number of times. The town itself is home to about 1,600 residents, and housing is primarily in the form of small bungalows. There is a community-run gas station as well as a grocery store. The nearest town is Pemberton, which is about eight kilometres away. The community operates a low-cost shuttle that takes community members into Pemberton several times a day, improving accessibility for non-drivers. Ullus, the community complex, and Ts'zil, the adult learning centre, are clustered together near the field, where recreational activities are

centred. Because of the community's location, cell service and Internet service are intermittent, although the Band has made great strides in creating Wi-Fi hotspots in areas of the community where people congregate.

3.3 The School

Ts'zil Learning Centre was a site of particular importance for this project. Without support from its staff, this project would have been impossible. Pilar, the education coordinator for Lílwat and a media and technology instructor at the school, was instrumental to the project. Pilar introduced me to Abra, the manager of the cultural centre, who also directs the Squamish Lílwat Cultural Centre in Whistler. Both Pilar and Abra dealt with the logistics of the workshops—recruiting participants, scheduling time to use the facilities, and maintaining contact with participants through email.

The learning centre, which houses the community's post-secondary and adult basic education programs, is constructed out of a number of connected portables. In the centre of the structures is a small community garden, as well as picnic tables where students and staff can congregate and relax. Although there are a few structural issues with the building, staff and students have done a remarkable job with limited resources, creating a school that is both by the community and for the community. Signs and posters in Ucwalmícwts are featured on the walls. Pictures of post-secondary graduates, as well as copies of their certificates and diplomas, are featured in the high-traffic hallway. A display with the photos, names, and educational programs of current post-secondary students in the community covers another wall.

The portables have been divided into a number of classes, where structured programming is offered during the academic year. The school also serves as a resource centre for community

members who need assistance; kitchen facilities make food preparation easy, and meals and snacks are often available. In addition, the school runs a clothing donation site out of the building, including garments for babies and children. Since the language workshops took place in mid-June, classes were out for the summer, and there were no students at the campus.

The majority of work was done in Ts'zil's computer lab. The lab has approximately 30 PC workstations with USB ports and CD-RW drives. High-speed Internet connectivity in the lab was reliable, and the environment was comfortable and air-conditioned. A variety of software was installed on the computers, since classes are run in the lab during the academic year. Relevant software for this project included Microsoft Office 2010, Internet Explorer, and Google Chrome. The instructor's desk included a PC workstation as well as a projector, allowing facilitators to model elements of the digital story creation process for participants.

3.4 The Language

Státimcets is an Interior Salish language with two main dialects: Státimcets and Ucwalmícwts. The Lílwat Nation speaks the Ucwalmícwts dialect. Although data for both dialects are aggregated by the First People's Culture Council (2014), the statistics are useful to gain a sense of the current Indigenous language context within the Státimcets speaking communities. FPCC identified 11 communities with a reported population of 6,668. Within this population, 2.1% characterized themselves as fluent speakers, 10.4% as semi-speakers, and 17.1% were currently learning the language. Four communities had access to audio recordings in the language, three communities had developed a language curriculum, and three communities had access to *FirstVoices* (FPCC, 2014). Mt. Currie has access to audio recordings, a language curriculum, and *FirstVoices*.

The Language Authority is dedicated to the revitalization of Ucwalmícwts. All communities sharing the language come together to collaborate on language planning. The Language Authority is made up of Elders, activists, teachers, and others with an interest in supporting Ucwalmícwts language learning. With the power vested in the organization through Chiefs and Councils, Language Authorities are responsible for all aspects of language planning and promotion. Duties range from orthography standardization to increasing domains of language use, from language teacher education and certification to securing ongoing language funding.

There are a number of ways for community members to learn their heritage language. The Lílwat Nation operates Xet'olacw Community School, which enrolls 224 students from pre-K through Grade 12. Students learn Ucwalmícwts in all grades at the school. In addition, there is an Ucwalmícwts immersion program for younger children, offered from nursery school to Grade 3. Young people from the community also attend high school at the public school in Pemberton, where Ucwalmícwts is taught as part of the school's language program. Adults can access Ucwalmícwts classes through the Ts'zil Learning Centre, which runs four levels of classes in rotation.

Although the community has a number of language programs designed sequentially around the age of learners, as well as a variety of resources, the Language Authority has prioritized the development of additional resources for Ucwalmícwts teaching and learning. A focal point for the provision of resources for the community has been the *FirstVoices* website. Currently, the Ucwalmícwts *FirstVoices* site contains audio files, primarily of words and phrases; it functions more as an archive than as a tool for language learning, particularly self-

directed language learning. The Language Authority has started to address this issue by uploading stories that demonstrate the use of Ucwalmícwts in context. The Lílwat Culture and Heritage Authority approved the present project because it viewed the workshop series as an opportunity to develop materials to add to the *FirstVoices* site, providing additional resources for community members wishing to bring the language into their homes.

3.5 The Materials Development Workshop Series

Due to scheduling challenges, Pilar and Abra felt that the most effective way to present the workshops was as part of a stand-alone series, rather than by incorporating it as an activity in any of the structured Ucwalmícwts classes offered in the community. They began referring to the workshop as a materials development pilot project. As the workshops progressed, I recognized the wisdom in taking this approach; no matter how much planning goes into a language workshop series, a number of unplanned challenges can arise. Referring to a project as a pilot takes the pressure for perfection off both the facilitators and the participants. It creates a space for uncertainty, where mistakes and missteps are viewed as opportunities for learning.

The four materials development workshops were scheduled from June 3, 2015 until June 11, 2015. Pilar took the lead in publicizing the workshops. She contacted community members who had been students in the Ucwalmícwts classes at Ts'zil, presenting the workshops as an opportunity for participants to create a variety of digital language resources. Although many participants had been students at Ts'zil, workshop registration was open to all interested Lílwat Nation members.

Pilar and Abra created the initial program schedule (Table 3.2). Facilitation was to be shared between myself, Pilar, Abra, and Saw7, a fluent speaker who teaches Ucwalmícwts at a

local university. There was a strong response from former students and community members, and a large group was expected.

Table 3.2 Workshop Schedule: Version 1

Dates: June 2015	
Deliverables: 3 Place Name Interactive Digital Stories <ul style="list-style-type: none"> • MJ’s father’s traditional place name • Where You Put Moccasins On • Where the Rivers Meet 	
Roles <ul style="list-style-type: none"> • Fluent speaker • Transcriber • Written language expert • Tech person • Photographer 	
Activities Three groups of participants will create interactive digital stories on three Lílwat place names. Each story will include an interactive map of the place name, information on the place and why it received its name, photos of the location, a recorded audio explanation of the location in Ucwalmícwts, and a written English translation.	
Tentative Schedule	
Wed. 3	<ul style="list-style-type: none"> • Assign groups and place names. • Answer the questions. <ul style="list-style-type: none"> ○ What is your place name? ○ Where is your place located? ○ Describe the area and its significance. Why did it receive that name (either from a physical feature, a resource, or an activity that happened at that location)? ○ Is there a story associated with the location? If so, what is it? ○ What is the current status of the place name (is it intact, are there homes and businesses on it, etc.)? • Write the English version of your informational story and complete your final edit.
Thurs. 4	<ul style="list-style-type: none"> • Create a storyboard for your place name story. • Translate your story into Ucwalmícwts. • Choose a reader, and have the reader practice the story for recording.
Sat. 6	Place Names Field Trip <ul style="list-style-type: none"> • As a group, travel to the three places and learn about them from experts. • Take photos of the place in your story, and record actions according to your storyboard. • Record the story in Ucwalmícwts.
Wed. 10	<ul style="list-style-type: none"> • Use PowerPoint to create digital stories. • Insert audio. • Insert photos according to the storyboard. • Insert written English translations.
Thurs. 11	<ul style="list-style-type: none"> • Complete final edit of digital stories. • Celebration and viewing of stories.

In keeping with the stipulations of my research agreement with the community, approximate English translations of the Ucwalmícwts place names are used in Table 3.2. While participants could engage in multiple roles, it was assumed that a particular role would dominate. For instance, while the fluent speaker might choose to take part in using PowerPoint to create the digital story, the fluent speaker would not be responsible for providing tech support to other participants. Discussions about whether the story was drafted in Ucwalmícwts or English occurred without my participation; therefore, I am uncertain as to why the initial schedule called for the stories to be written in English first.

On May 31, 2015, a terrible accident occurred just outside of Mt. Currie. On an extremely steep and twisty part of the road, a driver crossed the centre line of the highway and collided with a group of cyclists heading down the hill at high speed. The accident killed two cyclists, who were well-known members of the Whistler cycling community, as well as the passenger of the vehicle, a member of the Lílwat Nation (Lee-Young, 2015). The community in Mt. Currie was deeply impacted by this tragedy. The deceased man was the son of a facilitator, and other family members had signed up for the workshop. Out of respect to the deceased, and following the community's protocols, the workshop was postponed.

I decided to take a step back and wait for Pilar to contact me. I was very surprised when she called to let me know that the workshops could proceed the following week. We were able to reschedule the workshops quite easily, but as the dates stretched later into the month of June, many workshop registrants were no longer able to attend. The first workshops would be held on Wednesday, June 10, and Thursday, June 11, in the evenings, followed by an all-day workshop on Sunday, June 14. Wednesday, June 17, was scheduled as computer lab time. Unfortunately,

we were unable to reschedule the final celebration and viewing of stories, as many registrants had other commitments. In the end, the workshop on June 17 ended up conflicting with a number of meetings in the community, so the final workshop wasn't held until June 24.

3.5.1 Recruitment

The study was open to any workshop facilitator or registered workshop participant over the age of 19. Participants were recruited through face-to-face contact in the Ucwalmícwts materials development workshops. There was no requirement to participate in the study in order to take part in the materials development workshop. In order to differentiate between those who consented to participate in the research and those who decided to attend the workshop series only, I have developed two classes of individuals. Workshop registrants are individuals who attended one or more sessions of the workshop series but did not participate in the study.

Participants are individuals who consented to take part in the study.

On the first day of the workshop series, I introduced the research project, explained the purpose of the workshop, and answered registrants' questions. I decided to allow registrants to opt in or out of the research project over the course of the series. For the purpose of the study, it was necessary for a participant to attend a number of workshop sessions before completing the 22-item questionnaire, which was intended to be the primary data collection tool. My rationale for this particular approach to recruitment was based on my understanding of challenges facing adult registrants attending workshops. From my experiences teaching adult education, as well as my work organizing educational conferences, I recognize that adults often must change plans based on family, community, and employment needs on a short notice. I did not want to create a sense of obligation between myself and those who chose to attend workshop sessions. Instead, I felt that leaving the questionnaire until the end would allow workshop registrants to enjoy and

engage in the materials development workshop series, no matter what their stance on participating in the study was. This decision was to have a significant impact on data collection.

3.5.2 Workshop Attendance

Workshop registrants were predominantly female and ranged in age from young adults to Elders. Because I left data collection until the end of the workshop series, I was unable to collect specific data related to registrants who did not complete the entire series. Attendance varied from a high of around 15 on the first evening to a low of five. Ultimately, four individuals decided to participate in the study.

3.5.3 Workshop Facilitation

Pilar, Abra, and Saw7 were heavily involved in providing support and facilitating the workshops. Pilar drew on her expertise in teaching media and introduced workshop registrants to concepts related to photography and storyboarding. Pilar played an important role in the development of the Ucwalmícwts text for the digital story. Abra's expertise in relation to written Ucwalmícwts was essential as the group authored the text. Saw7's knowledge of Ucwalmícwts, the land, and protocols informed the workshop. All three women are educators by profession, and their years of experience in the field were evident as they facilitated the workshops. My role was largely technical; I demonstrated how to construct a simple interactive digital story using PowerPoint: how to add photographs to a slide, edit and combine photographs in the program, create simple animations, and embed audio.

Table 3.3 contains the revised schedule. The most significant change was the move to draft the story in the target language, in order to increase the amount of Ucwalmícwts spoken in the workshop. To support registrants throughout the process, we included an additional step: to create a dialogue prior to composing the text. The assumption was that completing a familiar

activity (making a dialogue) would help transition registrants to the more complex task of writing an original text in Ucwalmícwts.

Table 3.3 Revised Workshop Schedule

Dates: June 15			
Deliverable: 1 place name digital story			
Roles:		<ul style="list-style-type: none"> • Written language expert • Tech person • Photographer 	
<ul style="list-style-type: none"> • Fluent speaker • Transcriber 			
Revised Schedule			
Wed. June 10	Introduction to Digital Storytelling <ul style="list-style-type: none"> • Five steps • Things to consider • Examples 	Field Trip <ul style="list-style-type: none"> • MJ's father's place • Where You Put Moccasins On • Where the Rivers Meet 	Lab Activities <ul style="list-style-type: none"> • Decide on place name.
Thurs. June 11	Lab Activities In Ucwalmícwts, create a dialogue that answers the following questions: <ul style="list-style-type: none"> ○ What is your place name? ○ Where is your place located? ○ Describe the area and its significance. Why did it receive that name (either from a physical feature, a resource, or an activity that happened at that location)? ○ Is there a story associated with the location? If so, what is it? ○ What is the current status of the place name (is it intact, are there homes and businesses on it, etc.)? Create a storyboard for your place name story.		
Sun. June 14	Lab Activities <ul style="list-style-type: none"> • Identify images required for storyboard. • Photography tips. • Record audio. 	Field Trip <ul style="list-style-type: none"> • Places in the territory where pictures can be taken 	
Wed. June 24	<ul style="list-style-type: none"> • Use PowerPoint to create digital stories. • Insert audio. • Insert photos according to the storyboard. • Edit story. 		

3.6 Research Methods

3.6.1 Procedure

When I proposed the study, I intended to complete the bulk of my data collection at the end of the workshop sessions. During the workshops, my data collection was limited to a reflective journal, as per my research agreement with the community. I have drawn from this journal to reconstruct a brief narrative of the four workshop sessions.

3.6.1.1 Workshop 1: June 10, 2015

The workshop started at 6:00 pm. The number of registrants and the age range represented in the room surprised me. One of the workshop registrants had brought her daughter, who is enrolled in the elementary immersion program. On the other end of the spectrum were Elders, some of whom were in their eighties. Watching Pilar and Abra welcome registrants and introduce the project, I felt worried and in over my head. I noticed the close relationships between the registrants and wondered how receptive they would be to a stranger working alongside them for this project. I began by introducing myself and summarizing my study. I made sure to emphasize the voluntary nature of participation, and I reminded registrants that they had plenty of time to decide whether or not they wished to participate in the study.

Using PowerPoint, I introduced the basic elements of digital storytelling to the registrants. We discussed the five steps that would be part of the process: gathering images and video, creating a storyboard, writing and recording the story, editing assets into a digital story, and sharing the story. Following the brief introduction, I facilitated a brainstorming session, in which workshop registrants considered purposes, audiences, and media for storytelling. I showed the registrants three example projects created by UBC students. They were impressed with the projects, although some individuals who had limited experience with computers were slightly hesitant.

At this point in time, the plan for the workshops had not changed substantially from the original program schedule developed by Pilar and Abra. Our plan was to head out to the three locations, learn about them from MJ, an Elder who works with Abra at the cultural centre, and from Saw7. There was some confusion about the number of locations that we were to visit; the initial plan was to visit three sites. One of the sites required that specific protocol be followed

before we visited; unfortunately, the Elder who was supposed to lead the protocol was unable to attend the session due to unexpected circumstances. In the end, it was decided that the most appropriate course of action was to head to two of the sites: Where the Rivers Meet and Where You Put Moccasins On.

We piled into several cars and headed to Where the Rivers Meet. In order to get to the location, we drove on unpaved roads through fields with tall grasses. Since the site is on a community member's property, we asked for permission before we entered. The property is right by the Lillooet River. At this place, streams join the river as it flows towards the lake. MJ told registrants about the significance of this place, sharing stories about how Líl'wat7ul had experienced the place in the recent past. Workshop registrants took many photos of the place. It was a beautiful, warm evening, and no one was in a hurry to leave, but registrants recognized that time was short, so we headed back to Ts'zil.

The second place, Where You Put Moccasins On, is very close to Ts'zil. At this site, Saw7 discussed changes that have occurred at the site as a result of development and drainage control for flood prevention. She described the historical context of the site and discussed Líl'wat7ul practices and land usage in the area. Once again, registrants took photographs of the site.

After photographs had been taken, it was almost 9:00 pm. We headed back to Ts'zil and discussed next steps. Registrants discussed time constraints and scheduling conflicts that had arisen due to changes in the workshop dates. Also, a number of individuals expressed concern that the workshop, as it was conceived, was too ambitious. Rather than completing three separate digital stories, it was decided that one digital story would be more manageable.

3.6.1.2 Workshop 2: June 11, 2015

This session, which ran from 6:00 pm to 9:00 pm, was held in one of the classrooms at Ts'zil. The first activity in the workshop was to create the storyboard. After deciding that each workshop registrant would be responsible for completing one slide, the group began by plotting out the storyline at a general outline level. Guided by Pilar, the group decided on the general progression of the story. Stick figures were used to represent images that would be included on each slide. Once the story outline was completed, each registrant selected the slide for which they would be responsible. Pilar posted the completed storyboard on the wall, then the group began to generate the story on a slide-by-slide basis.

Once the basic structure of the story had been determined, the dynamic shifted. While Pilar remained standing, recording what the group said, language use shifted to Ucwalmícwts, and Saw7 took the lead. Pilar's questions about transcribing the story in Ucwalmícwts created opportunities for language learning; group members discussed features of the written and spoken language. As a non-speaker, it was challenging for me to follow this portion of the workshop. Although English was featured in the conversation, it was used more as a scaffold for understanding Ucwalmícwts rather than as a medium of conversation. For example, questions might be posed in English, while answers would be responded to in a blend of Ucwalmícwts and English.

The registrants began constructing the narrative in Ucwalmícwts. The group reviewed the narrative on a slide-by-slide basis. The discussion typically began with a review of what image would appear on the slide. Next, a discussion of the accompanying Ucwalmícwts phrase would begin. Although Saw7 is a fluent speaker, meaning making appeared to be joint and collaborative, and oral language was predominant. A registrant would propose a phrase to match

the visual representation. Other registrants would listen, repeat the phrase, and identify potential mistakes and suggest corrections. Once it was determined that the phrase was correct and accurate, Pilar would record it on the chart. Abra ensured that the phrase was written correctly before the registrants moved on to the next image. The process to transform oral language into text provided multiple opportunities for language learning, and Abra's interactions with Pilar demonstrated scaffolding.

Although registrants had access to an Ucwalmícwts dictionary, they relied on each other's knowledge of the language in order to complete the narrative. The dictionary was rarely used during this session, and it was relied upon for very specific knowledge—for example, to determine whether or not there were more correct or more descriptive words to use in the phrase. Rather than being used as a tool for translation, it was used as a thesaurus.

At one point in the session, there was confusion about the place name itself. Discussion arose around whether the correct name of the place was “Where You Put Moccasins On” or was actually “Where You Take Your Moccasins Off.” One of the registrants left the classroom and headed over to her mother's house. At the home, she used her phone to record her mother saying the place name. The registrants listened to the recording a number of times. The issue was settled after Abra was able to crosscheck the name on an older recording that was at the cultural centre. It was confirmed that correct place name was, in fact, “Where You Put Moccasins On.” By the end of the evening, registrants had completed the narrative and identified images that would be used in the telling of the story. Registrants were prepared for another field trip on the weekend.

3.6.1.3 Workshop 3: June 14, 2015

The group met early on Sunday morning. At this point, attendance had stabilized to a group of five, as some registrants were no longer able to come due to scheduling conflicts that had arisen when the workshop dates were shifted to dates later in June. By this workshop, it was clear that time was going to be the determiner of whether or not the story would be completed before the deadline.

Pilar began by presenting a mini-lesson on photography. She introduced the concept of composition and explained the rules around composing a shot. Using visual aids, she ensured that registrants were familiar with and able to use basic photographic techniques. The rationale behind presenting this lesson was to ensure that registrants took high-quality photographs that could be used in the digital story, as many shots from the first session were unusable. The group had access to a digital camera, but many registrants chose to take pictures with their phones. For the purposes of the pilot, cell phone pictures were adequate.

Once registrants were comfortable with how to take a picture, the discussion shifted to what should be photographed. Pilar felt that a shot list would ensure that time was used effectively and that all slides would have the required images. After the group compiled the list, each registrant was assigned shots and sections of the storyboard, and we headed out on the second field trip.

Although the selected place, Where You Put Moccasins On, was very close to the learning centre, the group needed to go out into different parts of Lílwat territory in order to find appropriate sites to shoot. Historically, Where You Put Moccasins On was bordered by a swamp. The name came about because people would have to take off their shoes before they waded

through the swamp. When they reached the edge of the swamp, Where You Put Moccasins On, they would put their shoes back on, hence the name. The group wanted to depict the place as it was historically, as well as how it is today. Further, they wanted to include in the digital story verbs related to coming out of water and putting on moccasins. This meant that we would have to travel to find a suitable swamp to use as a location.

We piled into Abra's truck and drove along the highway until we reached Xit'Olacw Road, where there is a bridge that crosses the Lillooet River. Close to the bridge, there is a swampy area to the east of the road. We got out of the truck and walked to a stream. We had been outside for about a minute when we were surrounded by a gigantic cloud of mosquitos. We had to run back to the truck. Once we were inside, the group formulated a plan. We would continue up Xit'Olacw road and then take Birkenhead River Road. On this road, there was a series of marshy areas and a lake.

Driving to the lake, there was much discussion about people and places in the area. The road to the lake was unpaved, and there were beautiful views. We arrived at the destination, which thankfully was completely free of mosquitos. The shots were taken quite quickly. Helena took the majority of the photos, using the digital camera. Pilar reviewed the photos to ensure that the shots were usable. I ended up being the legs coming out of the swamp and putting the moccasins on, as I was the tallest person, so it was easier for me to come in and out of the water and up the steep embankment. Although we had planned to take the back way to Ts'zil, Abra noticed that we were low on gas, so we came back using the same route for safety purposes.

Once we arrived back at Ts'zil, we broke for lunch. After lunch, the group was tired. Unfortunately, due to the time constraints, we had to continue the workshop. I gave a mini-lesson on importing images into PowerPoint and making simple animations. I spent the rest of the

afternoon working one-on-one with the registrants as they created slides. I was extremely impressed at how quickly the registrants picked up on everything, even though no one had used PowerPoint before. The registrants wanted to add effects to images to make them look old, and they felt that some photographs were inadequate. We went over possible solutions, including combining photographs. Photo editing was kept simple; registrants were able to do everything using only the tools available in PowerPoint. At the end of the session, the slides all had images.

While the registrants worked on the PowerPoint slides, Pilar and Saw7 went into a different classroom and recorded the audio for the story. Based on my understanding, Pilar recorded Saw7 using a video camera. Using Audacity, she extracted the audio from the video and split the MP3 file into smaller files so that each slide had its accompanying MP3. These were saved on a USB for use later on in the workshop.

3.6.1.4 Workshop 4: June 24, 2015

The final workshop took place on June 24. It had been rescheduled due to conflicts with other meetings, including the Band Council meeting. Since two registrants were council members, finding a date that worked for most was essential. Pilar was unable to attend this session, as she was away. Although the workshop ran smoothly, some of the momentum from earlier sessions had been lost due to the delay between the third and final sessions.

During this workshop, the presentation was finalized. Each registrant added audio to the slides that she had completed. The individual with the administration password for the computer lab was on vacation. As a result, we were unable to load the Ucwalmícwts font and keyboard onto the lab computers. In contrast to the second workshop, where discussion was focused around the content and form of the text, the conversation was process focused: participants discussed how to type Ucwalmícwts text in PowerPoint. This provoked discussion. While it was

important for registrants to learn how to add and animate text in order to produce digital stories in the future, it was important for the text to be correct and standardized if the digital story was going to be used as a resource in the community, or published on *FirstVoices*. As a result, the final text editing was done on my Apple laptop, as I had installed the appropriate font and keyboard.

During the final workshop, English was the predominant language. This was largely because of the nature of what we were discussing: computers and technology. Once again, I spent the workshop working one-on-one with the registrants, offering technical support. When the registrants were satisfied with their slides, these were combined to make the final product. The group reviewed the product, discussed changes, and made edits.

Unfortunately, there was no time left to have a gathering and show-and-tell celebration. Many of the initial registrants were not available—summer is a challenging time to bring people together. Not having a sharing celebration highlighted the importance of creating opportunities to present; stories exist to be told, and if there is no one to tell them to, something is lost.

3.6.2 Final Product

The digital story was incomplete at the close of the final workshop. Because the file had been transferred to an Apple computer from a PC, there were problems with the formatting. The largest problem arose from a difference between Office for Mac and PC Microsoft Office. In order to share the story, it was necessary to convert the PowerPoint file to a Movie file. Office for Mac doesn't have the option to do this.

In discussions, workshop registrants voiced concerns that adding a translation from the text could be distracting for learners. Rather than learning the target language, it was assumed that

users would rely on the translation. As a result, the story is entirely in Ucwalmícwts. No English is provided, to ensure that the user focuses on the target language.

The digital story is the property of Lílwat, and copies are at Ts’zil Learning Centre and the cultural centre. It is stored as a digital PowerPoint file. As per my research agreement, I have not undertaken any analysis of the story, or included language and/or images from the text in this paper. A brief description of the contents of the digital story is provided in Table 3.4.

Table 3.4 Digital Story Slide Descriptions

<ul style="list-style-type: none"> • Photograph of location today. • Text written in white font to stand out against background. • Audio plays automatically and can be repeated by pressing a button on the slide. • Audio format is identical for all slides in the digital story. 	<ul style="list-style-type: none"> • Map of traditional territory. • Territory situated in British Columbia. • Red text to stand out against map. • Slide transition is animated. 	<ul style="list-style-type: none"> • Ucwalmícwts place name map. • Transition between slides 2 and 3 simulates zooming in on map to location. • White text to stand out against map. • Letters in place name that mean "moccasins" is red to stand out. 	<ul style="list-style-type: none"> • Photograph of swampy area. • White text. to stand out against map.
<p>Title slide</p> <p>1</p>	<p>Traditional territory map</p> <p>2</p>	<p>Place name location map</p> <p>3</p>	<p>Place depicted as it was in the past</p> <p>4</p>
<ul style="list-style-type: none"> • Photograph of person walking in swamp. • White text to stand out against map. 	<ul style="list-style-type: none"> • Animated photograph demonstrates that the word the user hears and sees is an action word. • Person holds moccasins in hand. • White text to stand out against map. 	<ul style="list-style-type: none"> • Photograph of a pair of moccasins. • The word for "moccasin" is red. • The purpose for using red text is to draw the reader's attention to the use of the word "moccasin" in the place name. • The suffix is white to stand out against picture. The suffix isn't the focus in the slide. 	<ul style="list-style-type: none"> • Animated photograph demonstrates that the word the user hears and sees is an action word. • Letters associated with the word "moccasin" are red. • The suffixes are white to stand out against picture. The suffixes aren't the focus in the slide.
<p>Person walking through swamp</p> <p>5</p>	<p>Person stepping out of the swamp</p> <p>6</p>	<p>Moccasins</p> <p>7</p>	<p>Person putting on moccasins</p> <p>8</p>
<ul style="list-style-type: none"> • Black-and-white photograph of place, edited to appear historic. • Text is yellow to stand out from background. • Word that means "putting on moccasins" is red to highlight connection to place name. 	<ul style="list-style-type: none"> • Contemporary photograph of the location. • Text is white. • Word that means "putting on moccasins" is red to highlight the link between the activity and the place name. 		
<p>Explanation of place name</p> <p>9</p>	<p>The place today</p> <p>10</p>		

3.7 Data Collection

The data collection process that I proposed had to be modified significantly due to unforeseen events. Initially, data were to be collected through observation, an exit survey, and three interviews. The survey questions were designed to assess participants' experiences and provide a space for participants to reflect on their language practices. Unfortunately, due to scheduling changes, a large percentage of workshop registrants were unable to complete the workshop series. By the final session, June 24, only five registrants remained. I decided to switch my approach.

Four of the registrants agreed to participate in interviews, so I decided not to administer the questionnaire, since there would be significant overlap between the questionnaire responses and the interview responses. I made amendments to my ethics application, seeking to administer the questionnaire to individuals who had expressed interest in the workshop but were unable to attend. Although I received approval, the questionnaire was never distributed. Despite my best efforts, I was unable to get in contact with Pilar to distribute the questionnaires to the email list.

Instead, data were collected through observation and interviews. During the workshop series, I took notes. After each workshop, I reviewed my notes and wrote a journal entry about my experience that session. These reflections are summarized above.

Data were also collected through participant interviews. After the workshop series, I met with each of the participants in the location of their choosing; for three participants, the interview was held at Ts'zil Learning Centre. The final interview was held at the participant's place of employment, a public school in Pemberton.

Interviews were conducted following principles of phenomenological interviewing, which holds that humans actively perceive and construct meaning from their context and experiences (Seidman, 2006). Phenomenological interviewing methodologies were selected in order to create a space where participants could reconstruct their experiences as participants in the materials development workshop.

In the original proposal, each participant was to be interviewed on three separate occasions. Time constraints did not allow for this. Instead, each interview was structured according to Seidman's (2006) guidelines. The interview was divided into three segments, and each segment was dedicated to a particular aspect of a participant's experiences during the materials development workshop. In the first segment, participants were asked to share how they initially became interested in Indigenous language education and, more specifically, what had led them to register in the workshop. During the second segment, the participants spoke about their experiences in the workshop. The final segment was designed as an opportunity for participants to reflect on and make sense of their experiences creating digital resources in Ucwalmícwts. The questions were designed to be open-ended, in order to allow participants to meaningfully contextualize and reflect on their experiences as Indigenous language learners. Interviews varied in length; however, all were under an hour. Interview prompts are reproduced in Appendix B.

3.8 Data Analysis

Smith (1999) exposed the potential for researchers to draw incorrect conclusions when working in cross-cultural contexts. After each interview, the audio recording was transcribed. The participants were emailed their transcript and had the opportunity to clarify and verify that the transcription accurately represented interview content. Corrected, verified transcripts were then uploaded into NVivo.

Guided by an informed grounded theory (Thornberg, 2012) approach, I analyzed the transcripts in NVivo, continuing to review literature as themes emerged from the analysis. I began by approaching the transcripts from word frequency patterns subtopics, analyzed in reference to the study questions. Next, I studied interview data with reference to field notes and the reflective journal. I highlighted each theme separately, then coded all interviews for the themes. The transcripts were also analyzed on the basis of content. Through triangulation, data were verified.

Chapter 4: Findings

This chapter provides a summary of the major themes that arose from analysis of the transcripts of participant interviews. Findings will be discussed in further detail in Chapter 5. Discussion was largely focused around the following nodes: community-based materials development, using technology for Indigenous language learning, and creating processes with materials development that met the needs of the community and its language workers.

4.1 Community-Based Materials Development (CBMD)

Overall, participants viewed CBMD positively. For participants, the land is critically important to the language, as the Lílwat Nation and the Ucwalmícwts language have deep roots and relationships with the territory. Situating materials development in the community also allowed for the participation of language speakers in the development process. Relationality also arose as an important aspect of CBMD, although the interaction between speakers and learners posed challenges of its own.

4.1.1 “Language is written from the land.”

Abra’s assertion that “language is written from the land” introduces an important theme arising from discussions with all participants: the centrality of place to Ucwalmícwts language teaching and learning. As Abra noted in her interview, place was central to the development of Ucwalmícwts. She contrasted the language of the Lílwat Nation, whom she described as “river and mountain people,” with the languages of the coastal First Nations, the “ocean people.”

Using the Place Name Project as an example, she noted how language use in the community had changed as the surrounding area had changed:

They [community members] don't even know that this was a swamp area we live on now, and how it changed over time when they lowered the lake. So then the language of this area was forgotten. Nobody uses swamp words anymore, for example, lily pads and all that, because it's not here.

Although a wealth of language and story is related to each place in the territory, changes to the territory have resulted in changes to language use. A person familiar with Ucwalmícwts but unfamiliar with the history of the area would wonder about the relationship between a place name and its physical location, since the two are no longer related due to changes resulting from flood-plain engineering. In a similar manner, people's language use in relation to the area changed significantly, with a new vocabulary being adopted and another dropped as the area changed from swamp to drier ground.

Pilar associated place with community. She indicated that a particular strength of CBMD was that "all the language speakers [are] here." For Pilar, going out on the land was a critical feature separating CBMD from materials development at another location—for example, at a university—as participants were able to go out on the land:

If you were doing this down at the college, you could send people to go out and get pictures or ask somebody to send pictures. But everybody that was involved actually got to walk on the land, go see the spot that we went to, actually go on the water and walk out on the water. And then also when you have a group like that—again, when we were trying to find the word for getting out of the water—you know, Saw7 let us know, "No, you wouldn't just use this word, there's another word, so let's figure out what it is." And then when we were trying to find out the name of the place names, Saw7 said it one way, but Bridget said, "No, no, my mom says it another way." So she ran out for 10 minutes

and went and recorded—I think her grandma, or her aunt, or her mom?—and then she recorded her dad, too, and then brought it right back. You can't do that if you're down in the city at the school, and so there's a huge benefit. The stories are from here; they need to be created here. It's too institutional if you go into a cold room and try and do that. We were here, we were in the classroom, but it's a classroom that's pretty . . . people are used to being here and part of the community, and we were out on the land and doing it and then coming back in.

Pilar identified differences between completing the project in the community and completing it at an institution. Although it would be feasible to collect similar images for the project, either by collecting the images as individuals or by requesting that a community member take pictures and forward them to a language learner, something special happens when the materials development group goes together onto the land. She described language learning opportunities that were created as a result of the hands-on experiential nature of CBMD—for instance, how the physical process of getting in and out of the water generated a teachable moment, where Saw7 took the opportunity to clarify participants' understanding of Ucwalmícwts phrases. Through the photography process, participants had the opportunity to deepen their understanding of Ucwalmícwts and the relationship between the language and the territory. Furthermore, participants learned about the community's practices on the land, both historical and contemporary.

Close proximity to language experts was also identified as a benefit of CBMD. Pilar described strategies that individuals from the group used to ensure accuracy; as a result of being situated in the community, participants were able to seek out Ucwalmícwts language speakers on an informal basis in order to crosscheck the materials development work. Although it could be

possible to do this from a location outside of the community, working informally with language speakers on a face-to-face basis has definite advantages. Perhaps the greatest benefit stems from the ease with which language speakers, who are often Elders, can participate and share their knowledge. Speakers do not have to navigate unfamiliar technologies or ensure that they are near a telephone at a specific time. Instead, the responsibility for technology use falls on the knowledge seeker. Relatively simple technology can be used for documentation purposes. In the case of the digital materials development project, Bridget used her iPhone as a recording device.

Themes of relationality also arose from discussions on basing materials development in a community setting. Pilar's comments about close proximity to language speakers also were centred on relationships. On an informal basis, participants were able to reach out to their social networks physically, as Bridget did, when she consulted family members about the proper pronunciation of the place name. CBMD creates opportunities for positive interactions in the target language, outside of the classroom. Through the process, opportunities for speaking Ucwalmícwts in the home were created. Although in the particular case of Bridget, using the language at home is already an element of her language-learning behaviours, for those who may be uncomfortable using the language outside of the classroom, this activity may be a useful scaffold for home use.

Situating materials development in the community also allows for broader participation as well as interaction between and amongst community members, regardless of their participation in the CBMD process. Two particularly salient examples from the project occurred during the first week of workshops. When the group travelled to the first field trip location, which was viewable from the yard of a community member, friends and family of the community member came out and took part in MJ's teachings about the history and importance

of the location for Lílwat7úl. Even though these individuals weren't registered in the workshop, they were able to participate in a language and cultural learning experience. Since much of the work developing the digital story took place at Ts'zil Learning Centre, which is centrally located, community members also popped in to see what was going on. An elderly gentleman stopped in several times to visit with Saw7 and other group members, speaking in Ucwalmícwts the entire time. Participants had the opportunity to listen to and practice informal conversations in a socially situated context. These informal interactions were as important for language learning as anything that was done during the creation of the materials.

For Bridget, relationality was the greatest benefit of CBMD. In addition to the importance of place and community discussed by other participants, she identified relationships between the creators of the materials and the users of the materials as a positive characteristic of CBMD:

I think the biggest benefit for anybody who would use whatever is being produced is connecting to who has done it. As soon as they hear Saw7's voice, they know who it is. Soon as they see certain things, I'm just imagining the credits, "Oh I know, I know," and then there's more of a connection with the material. "I know who did that," it's like reading a book from somebody you know, "Oh, I met that person," it's more important. It's local. That's really good.

Familiar voices, faces, and places encourage language learners to connect with the language on a deeper level, according to Bridget. Knowing the developers of the language materials allows learners to make connections between relationships and language learning possibilities.

Although all of the participants spoke positively about CBMD, a number of challenges were brought up during the interviews. Coordination of group members and participant engagement were mentioned by three of the four participants. This was particularly important, since the workshop was voluntary and unconnected to any language classes running in the community. Project timelines were also challenging. Abra noted that June was a particularly difficult month in which to organize this activity, since many interested community members were involved in activities related to the end of the school year, such as graduations. A common point of agreement was that having students registered in a program—for example, the Lílwat's First Nations Studies Program at Ts'zil Learning Centre—would be a more effective alternative. Since work would be for credit, participants would receive a tangible benefit.

Both Saw7 and Abra recognized relational challenges, highlighting the importance of community-led CBMD projects. Outsiders, such as myself, would unlikely be aware of these critical factors around how community members relate to their territory and each other. Saw7 spoke of the need to recognize community protocols before embarking on CBMD projects:

The only drawback that I saw during this session that we had was when Abra got a resource worker and I to talk about the protocol of going out in our territory we haven't been in before. This one was pretty familiar to us, but if we were to go to the S7istken Site, or go to the S7istken Village Site, we would definitely have to be using the protocol that is proper for us to enter into that. And that's what's missing a lot of times when we are exploring our territory, is to be cautious, because it can harm you if you're not prepared. So learning about that, about what the protocol consists of, is a step towards getting into this kind of project again. I think it's good for even instructors or facilitators,

for all of us, to be aware of them. We are aware of the mosquitoes, but the spirituality part of it we didn't...

Initially, during discussions of which sites should be selected for the digital story project, the idea of doing stories related to the S7istken Village Site was brought up. S7istken are the historical winter houses of the Lílwat7úl. Because these sites are no longer inhabited, and haven't been for some time, it would be necessary to perform the required protocols before visiting. Unfortunately, the resource worker was unavailable to guide workshop registrants, and as a result, the group did not visit the S7istken sites, as it would have been inappropriate or harmful to do so. Saw7 emphasized the importance of behaving in culturally appropriate ways when developing materials, and more generally when undertaking any work in the territory. Too often, as she notes, we fall into the trap of focusing on physical challenges to CBMD—in this case, the bothersome mosquitos—while neglecting essential spiritual aspects arising from working in the territory.

Abra identified relationships between language speakers and learners as a site for possible challenges during CBMD. Characterizing these as personnel issues, Abra explained how there was the potential for misunderstandings to arise between elderly fluent speakers, younger and middle-aged semi-speakers, and younger learners.

I'm in the middle, but the youth who use these [resources for speaking and learning Ucwalmícwts], the language changes, and so sometimes we get into it with some of the elders. They say, "No, that's not how to say it. You've got to say it like this." And they learned it this way. The older speakers, it's getting less and less of them being heard.

Even some of them are going into the mid-speakers. You understand? The older speakers,

the mid-speakers, and young speakers, and new learners. That's what some of the problems are. Who's saying it the right way. We're going by the reel-to-reels, which were made years ago. Now when I look at the dictionary which we're working on today, it's like they're different and the words are kind of described differently, so now we're having to put both in.

Like all languages, Ucwalmícwts is changing. Navigating this change and taking into account the needs of learners and speakers is a crucial aspect of CBMD. Abra raised an unsettling point—older speakers not being heard. Fluent speakers are predominantly Elders. There is the perception that learners are bypassing Elders, instead directing language questions to mid-speakers, middle-aged individuals who are semi-fluent to fluent speakers. Differences in opinion between the elderly fluent speakers and the mid-speakers have the potential to result in conflict and to create an environment where elders' knowledge isn't taken into account. Respecting elders and their knowledge is an essential aspect of CBMD. Thankfully, the community has an awareness of the problem, which is the first step in addressing the issue. Furthermore, Abra and other language workers in the community have access to archived materials and recordings to use as a reference.

4.2 Using Technology for Indigenous Language Learning

Participants viewed using technologies, such as the digital story, as a benefit for Ucwalmícwts learners. However, the participants felt these materials were best suited for the home. Suggested uses of technology for language learning included review and self-assessment for those who were learning language in the preferred setting: a face-to-face immersion program. Challenges to using technology for language learning stem from connectivity problems, access to hardware and devices, and user comfort levels. The goal for the final product is for it to be

converted into a movie file and posted on the Lilwat *FirstVoices* site. Many community members access the site for language learning, typically using their cellular phones.

4.2.1 “I know that it’s not the natural process of learning a language, but...”

Although Pilar is the source of the title of this sub-section, all participants felt that there were benefits to using technology for Ucwalmícwts language learning. In particular, the ability to access audio recordings of the target language was seen as being especially useful. Many participants mentioned the *FirstVoices* website as an important resource for language learning, both in the classroom and at home.

For Pilar, who is originally from the United States, home access to audio recordings was a fundamental element of her language learning:

When I was taking the linguistics class, I didn’t even know the sounds of the letters, and a lot of people do because they grew up with some—they’ve taken language classes before—and I didn’t always want to bug people to ask them how to say a letter. And so I would go on FirstVoices and I would just practice hitting the “a” and listening to the sound of “a” and listening to all the letters. It really helped me, because otherwise I wouldn’t have learned it, because I wouldn’t have wanted to bug people all the time. So it was a great way for me to have access to a fluent speaker from home, and I don’t have that in my community.

Unlike many of her classmates, Pilar had had no prior exposure to Ucwalmícwts in the home, community, or classroom. She also had no relations who were learners or speakers to turn to for support. However, Pilar was extremely comfortable using FirstVoices, having been involved in the development of the website, and the website’s resources allowed her to access fluent

speakers in her home. Pilar had the opportunity to develop phonemic awareness on her own, rather than by asking for help from other learners or from the language instructor. Pilar was then able to participate more fully in the classroom, in a manner similar to her classmates.

For Bridget, using audio technologies was central to her language-learning practices. Bridget used FirstVoices on a weekly basis when she was completing her language coursework. Now that she is continuing her learning in the community, she is less reliant on the site. Instead, she uses technology for documentation and self-assessment purposes:

I use my recording on my phone to get words pronounced, so I can remember them, and then I can transcribe them so I can remember it easier. If there's a word I don't know, I'll ask the fluent speakers around and record them saying it so I don't forget, or misinterpret, what they're saying.

Bridget is very close to a number of fluent speakers and has incorporated her phone into their normal, everyday interactions. If she is uncertain about pronunciation, she asks a speaker to record the correct pronunciation on her phone. She then uses the recording feature to practice. Listening to the playback of her speech, she compares it with the examples recorded by fluent speakers, identifying areas for continued practice. In this way, her phone becomes a tool for documentation, learning, and practice. In a manner similar to Pilar, she is able to practice before she interacts with language speakers, avoiding creating a bothersome situation where excess time is spent on pronouncing and defining individual words, rather than communicating in Ucwalmícwts in context.

Abra, who has been teaching, documenting, and creating materials in Ucwalmícwts for decades, also indicated that technologies were useful for language learning in the home:

It seems to be the better way for younger learners to learn and to document their work, because you could speak, and then by yourself . . . you don't want anybody else to hear—you can listen to yourself. When I learned how to do that, record and then go back and listen to how you said it, and then listen to the Elder. So you can document and learn on your own.

Abra was the only participant who made a connection between the age of the language learner and their use of technology. For Abra, technology was a hook for younger learners, allowing them to expand new literacies in expanded language domains. Like Pilar and Bridget, Abra identified the utility of technology-enhanced language learning outside of the classroom. Opportunities to listen to Elders modeling speech, coupled with spaces for self-assessment in a non-judgmental environment, are key benefits arising from technology-enhanced language learning.

Saw7 shared the other participants' views related to the uses of sound in technology-enhanced language learning. For Saw7, observing young learners quickly incorporate technologies into their language-learning practices caused her to reflect on her own experiences using technology for language learning. Saw7 characterized technology as efficient but “too simple” and was far more comfortable leaving technology to others; perhaps this was a result of her speaking Ucwalmícwts as a first language, having learned it orally in the home.

Using technology for Ucwalmícwts language learning was identified as a small component of the language learning process. Overwhelmingly, it was viewed as a tool for self-assessment and review. As Abra noted, “being immersed in the language is the right way to teach a language.” Technology is no substitute for face-to-face interactions between learners and speakers in an Ucwalmícwts-only environment. The potential of technology-based language

teaching and learning strategies is significantly lower than face-to-face language learning opportunities in the community.

Additional challenges arose from using technology in the language classroom. Problems arose from both hardware and networks. These challenges were shared by the Ts'zil Learning Centre as well as the Language and Culture Department, and they were issues both before and after the study took place. For example, computers available in the community lacked the capacity to handle the level of work that was required; according to Abra, as a result, "the computers would shut down because we were putting too much work in them." Large file sizes made sharing materials a challenge. Network issues also created challenging situations, particularly in the classroom environment. When Ts'zil classes are in session, students experience significant frustration with slow Internet and service outages during class time. As a result, teachers at the learning centre are forced to develop no-tech lessons alongside any tech-based lessons, as an insurance policy. Within the community, access to Internet is irregular and computer use is not uniform, which creates a challenge with regards to using digital materials in the home.

Finally, differences in comfort with using technologies for language learning impacted the usefulness of technology as a tool for language learning. Three out of four participants identified community access to technology as a negative aspect of using technologies for language-learning purposes. Bridget mentioned that a number of households in Mt. Currie were not connected to the Internet, and that many community members had no access to computers. Although many community members have cellphones, many "don't know the full uses of it. So it's not readily available." In this quote, Bridget raises the important point that any efforts to introduce technology-based language instruction into the community must take into account

access and must include an educational “how-to” component, even for community members with access to particular technologies. Although Abra and Saw7 use technologies in their professional work in the area of language revitalization, neither was particularly comfortable using it in this situation. According to Abra, “technologies are not my best friend.” Both were experienced users and open to learning new practices, but they preferred other approaches to language learning.

4.3 Indigitizing Materials Development

Although participants’ views on the utility of using technologies for language teaching and learning purposes was mixed, participants had high views of the potential for using digital technologies in materials development. Using digital technologies for materials development has the potential to expand language documentation and dissemination within the community in a manner that engages members, particularly youths.

4.3.1 “We can document it, record it, and it’s down.”

Interview participants made connections between developing language materials and language documentation. Pilar, the participant with the most experience working with new technologies, asserted:

The other benefit is that you’re documenting processes and important information and you can also document traditions and by showing it and by having the speaker say it, you’re getting all the little technicalities of the language.

Using multimedia technologies for materials creation allows end users of the material to gain a deeper understanding of the language. Ucwalmícwts is a polysynthetic language: words are made out of many morphemes (grammatical units). As a result, many place names are actually sentence-words. This aspect of the language can confuse learners, especially those without a background in linguistics. The digital story that was developed presents a possible scaffold for

learners. Using images and audio, participants were able to construct a visual representation of the place name that included all lexical categories. Due to time constraints, grammatical morphemes did not receive the same treatment. Since the story was animated, the action morpheme in the place name was apparent for the viewer. Further, the creation of materials, which were likely to be unduplicated in the community, added to the existing bank of Ucwalmícwts language documentation.

According to Pilar, who also provides technology support for the Lílwat Nation, some form of digital archive/searchable database has been established to protect and collect Lílwat knowledge. She references the wealth of information that has been gathered by the lands department:

And they have a new program where they can document and put in the name of a bird, where it's found, the name of it in Ucwalmícwts, and they have a room—a couple of rooms—full of information that is just sitting there.

Pilar identifies a major benefit of the community's data collection and storage system. Digital archives allow for the consolidation of Lílwat knowledge, with the Nation becoming the archivist and gatekeeper. Rather than information being collected from and removed from the community, as has been the case from a historical perspective, information is collected by and for the community, and it remains there.

Further, as information is archived, it becomes accessible for Ucwalmícwts curriculum developers in the community, who can access information required to create language materials through the archive. This has a significant impact on the timeliness and ease of materials development:

Last year we worked on trying to do some research about place names, and we had to go through all the documents and read it, and every time we saw that place name, we'd highlight it. But if you have it all on a program like the program we were using—I forget the name of it, Knowledge Keepers, or something—you can just type in the place name and then everything ever written about that once it gets in, you'll be able to have at your fingers, right at your fingertips, and you can use it. And so technology is essential in storing and gathering information.

The time required to complete background research is significantly reduced, increasing the volume of materials that can potentially be created by developers. This is hugely important for the teaching and learning of under-resourced languages, such as Ucwalmícwts.

The multimedia aspect of digital materials was also singled out as a benefit of the project.

According to Abra:

Technology is very helpful that way. We benefit from being able to record it, and you see it. That's the main thing in technology is that you're able to see the picture or the video, hear the words, speak the words, and hear them back to you.

Digital materials allow users to have multi-sensory learning experiences. Even if the learner lives away from the community, they can hear voices of language speakers in their home. The visual aspect of materials development was also viewed positively. Images in the story were compared with images in a picture book. The images scaffold the learner's understanding of the language, ensuring that the learner understands the main idea, even if some of the language is beyond the learner's current language capabilities.

Key criticisms of using technology for materials development closely paralleled participants' critiques of using technology for language learning: access, capacity, and

connectivity. In particular, recording audio was seen as a challenge. According to Abra, not having a recording booth accessible in the community made materials development difficult:

Recording is the hardest part we have. We have to hire a studio, because it's quiet. Most of the time, even when you go on the land to record the Elders, there's always some outside noises that disrupt, cars going by or planes flying over. So learning those other parts where you can cut out most of that recording on the land is needed as well.

In order to create usable materials, often developers will have to leave the community and travel. This results in challenges arising from transportation and funding. The other alternative is for the community to develop capacity in audio production and sound editing, allowing for distracting background sounds to be removed post-production. As only a small number of community members are working in the language and culture and education departments, the pool of applicants to undertake training is rather limited.

Bridget raised a concern about digital materials development related to the accuracy of materials:

The benefit is that you are doing documentation while you do this, but then if you have somebody . . . if there's a mistake . . . that mistake is going to be going on indefinitely. Yes, just with the [place name] we had fluent speakers who had already changed how it's said, and that's within 20 years of the first person who said it [on the recording in the archives]. There's a clear reason, when you look at the language there's a clear pronunciation, and there's a clear reason why it's pronounced like that, but people taking shortcuts, people do different inflections, different accents, it changes the word, and it changes the meaning.

When creating materials, there is the possibility of introducing alternative ways of speaking into the record of the language. In the case of the Place Names Project, the shift of the name resulted in the meaning of the name being the opposite of what it had been known as by community members in the past.

The development of language materials, whether digital or otherwise, does create the potential for language change, particularly in the case of small languages. A small group of individuals, through the Language Authority, are responsible for assuring the accuracy of language documentation. A key benefit of using digital technologies to develop materials is that it opens up the process to other community members, including language learners. As a result, it is possible that errors may be introduced into the curriculum.

4.3.2 “If you can hook them through the technology...then why not?”

All participants connected the development of digital materials with engaging youth in Ucwalmícwts language learning. Bridget, who works with secondary students, viewed this as a way to bridge learning with what they are already doing: “That’s where their whole livelihood seems to be lately, on video games, and cell phones, and Facebook.” By creating resources that are accessible by youths through technologies they are already using, Bridget saw possibilities for getting youths excited about language learning. Abra made similar points:

The majority of young people and our people in the community are on Facebook. They’re on cell phones that have this technology. If we develop materials, we can put it on Facebook or on our website, and they could listen to the language.

Reaching out to youths using tools and media with which they are familiar is an area that has been identified by language stakeholders in the community as a strategy to increase language use with this particular population. If the language is on young peoples’ devices, it is hoped that

youths will increase their use of Ucwalmícwts outside of the classroom, in their homes, and in the community.

Technology use and youths poses challenges. Bridget problematized the attachment of young people to technologies:

I would hope they wouldn't limit it to the technology. I would hope by bringing them to different kinds of trees, to give them their names, it gets them out and away from their technology, rather than sitting with their technology [laughter]. So kind of a Catch-22 is you're doing it for that, but when we actually went out, and walked, and saw, and experienced, and actually watching them making the pictures, gets into your head way more, and you would hope that they would remember all that part, and not just sit and look at the screen.

In order for young people to benefit from these technologies, they have to also get out on the land and experience the territory while communicating in Ucwalmícwts. Bridget also raised the point that the materials development process is, in itself, a language-learning experience.

Creating materials with youths may create spaces where young people pry themselves away from their screens and engage with the language.

Chapter 5: Discussion

The study was framed under a broad research question: What is the potential of digital storytelling workshops for Indigenous language revitalization efforts? The question was then subdivided into three, more focused, questions:

- A. How do the technological processes of the workshop intersect with the language learning processes? How is materials development impacted when technology is introduced?
- B. How does community-based language materials production impact language learning and meaning making?

The intention of the study was to learn more about how people use language when working together to develop and produce materials that could be used within a community to promote the teaching, learning, and speaking of the Indigenous language. I was also interested in whether materials development processes differed significantly when materials were produced within a particular community rather than outside of the community.

Most of all, I was interested in learning more about the feasibility of this type of project in the context of BC First Nations languages, which can be characterized as “small languages [in] small language communities” (Hinton, 2007, p. 177). I take the concept of small languages to mean languages that are under-resourced, especially those that are not considered global languages (which are typically taught as foreign languages outside of their country of origin). Small languages do not have the wealth of curriculum that these global languages have; for example, it is far easier to locate materials developed for teaching Spanish than for teaching Ucwalmícwts. Small language communities are also taken to mean those having few speakers. Additionally, this concept can apply to potential speakers within the community; the number of

potential speakers of Ucwalmícwts is significantly lower than that of potential Cree speakers, for example.

In discussions about language revitalization projects, size and community capacity are key considerations. The size of the Lílwat First Nation means that developing processes that require many people to implement are less desirable than those that can be developed by few. Further, the scarcity of funding for Indigenous language projects precludes hiring specialists from outside of the community to support language materials development, so a practical materials creation project should not require specialized technical expertise. Finally, within this financial context, projects that are low or no cost are most desirable, allowing resources to be stretched amongst all language and culture initiatives.

5.1 Language Learning and Technology

The technological processes of the materials development workshop intersected with language learning processes in a number of ways. When the study was conceptualized, I wondered whether participants would become so overwhelmed by the medium of the digital story that the technological skills required to complete the project would be prioritized, while the language skills required to create the story would be sidelined. While discussions around the construction of the digital story were an essential feature of the workshop series, language learning processes dominated. In retrospect, participants spoke more about how they related to the language and each other in the workshop than about how they experienced creating the digital story itself.

If there had been a greater number of participants, with greater variation in both language ability and familiarity with technology, it is likely that there would have been a different outcome.

5.1.1 Technology as Tool

Participants viewed technology as a single component of an instructor's language learning toolkit. Aligning with Galla's (2010) findings, technology was seen as a supplement to language teaching. Face-to-face and immersion-based approaches were viewed as preferable to technology-mediated language instruction. These approaches are better suited to the community's holistic view of its language, which is intertwined with conceptions about the land, the culture, community traditions, and identity. The use of technology alone was viewed as an inadequate mechanism for increasing the number of Ucwalmícwts speakers in the Lílwat community. One participant described it as cold—removed from the relationality that is an important characteristic of community interactions.

The strengths associated with using technology as a tool for language instruction arise from the ability to include audio, visual, and video components within a teaching or learning text. Participants noted the benefits of the digital story for bringing the voices of the Elders—and, more broadly, of the community—into language learners' homes. Using technology to develop language learning materials allows spoken discourse in the target language into the home. Hermes and colleagues (2013) described technology as an “opportunity to bridge the gap between speakers and learners [and] bring the few speakers available into many different homes” (p. 396) while providing a model of appropriate spoken discourse. Opportunities to disperse

language learning materials to a broader group of learners, including those outside of the community, was also identified as a positive aspect.

5.1.2 Learning versus Practicing

In the interviews, learners made distinctions between the acts of learning and of practicing the target language. Technology was associated with practicing the language, while learning was conceptualized in a more relational, interpersonal context. The discussion left me questioning whether practice was the appropriate term for the construct that the participants were describing.

McNamara (2011) asserted that pedagogy and assessment share a number of features, including that both are: deliberate and planned; involve samples of performance; make reference to established criteria; and lead to decisions about intervention and targeted learning efforts. Participants' descriptions of practice included parallels with both pedagogy and assessment. Participants deliberately planned opportunities for practice and created samples of performance. Participants assessed their samples, referencing established criteria, namely the recordings hosted on the FirstVoices website. Based on their self-assessments, participants decided on next steps for language learning, whether those involved approaching a speaker or instructor, or continuing to practice a particular aspect of the language.

Technology was seen as especially beneficial for these purposes. Discussions around participants' current uses of technology for language learning purposes all included information about how audio and recording technology was being utilized to assess learning informally, while offering an opportunity to improve in advance of working with language teachers and speakers. Technologies, especially recording apps for cell phones, and the Lílwat *FirstVoices*

site, were identified as key tools for formative assessment.

Creating opportunities for Indigenous language learners' self-assessments is necessary in order to allow learners take ownership of the learning. When learners have opportunities to measure their learning against established criteria, they are encouraged to become more responsible, independent, and reflexive. Using technologies, such as digital stories, as tools for both pedagogy and assessment can provide learners with an additional method for language learning.

5.1.3 Communication: The Heart of Learning

Above all, participants identified the social nature of language learning as the most important aspect. There appeared to be a disconnect between the language socialization that occurs when a learner and speaker interact in the community or in a classroom, and the language socialization that occurs when students work with digital materials by themselves in the home or community. Communication was largely unidirectional using the digital story. Although the story could be developed into an interactive one, wherein users are able to input the target language in addition to receiving output, I inferred that a technology that allowed for synchronous or asynchronous communication between speakers and learners would be preferable. Perhaps this is where technology has the most potential for Indigenous language revitalization. Social media may provide a valuable platform for language learners, compressing physical distances between learners and speakers while creating new domains for target language use.

5.2 Technology and Materials Development

The materials development process changes significantly when technology is introduced. The amount of time and number of people required to document, record, and develop language

materials is significantly reduced. Searchable community-created digital archives consolidate Lílwat knowledge; further, the availability of a searchable database makes a wealth of knowledge accessible for language material developers. In a relatively small community, such as Mt. Currie, ease of access and short turnaround times make digital materials development a potential tool for promoting language learning in the community. Most importantly, the community controls the development process, maintaining ownership, control, access, and possession of the materials.

5.2.1 Tools for Control

For participants, Ucwalmícwts is not an object to be catalogued or studied. It lives, connecting culture, the land, and the community. As Hermes (2012) asserted:

While native scholars and activists are reminded of the long-standing distrust between “researchers” and “researched” (Mihsuah 1998) the time for thinking of language as an object only, information extrapolated and preserved, is quickly passing. (132)

In the past, community needs may have been secondary to the needs of researchers, who were interested in collecting specific elements of the language for particular reasons. Community members may have had limited access to the knowledge that they had provided to the researcher. Often, publications based on the research would appear only in academic journals, making the research inaccessible to the community. While Indigenous scholars and communities have done considerable work to repatriate knowledge and develop appropriate methods for doing research with communities, community-driven materials development may nonetheless in the past have been unfeasible due to community capacity. Digital materials development shifts the paradigm. Community members are able to develop low-cost, high-quality materials, despite capacity

limitations. Rather than having to enter into agreements with researchers or publishing companies, communities can develop their materials in-house.

Digital materials development allows the community to have unprecedented control of over self-representation, distribution, and production (Hermes, 2012). Authority over language and culture are repatriated to the community, allowing knowledge keepers, including Elders, to assume central roles in the project (Moore & Hennessy, 2006). Rather than being simply language materials, texts become media of instruction. Community epistemologies, pedagogies, and language ideologies inform the development of the text, ensuring its suitability for use by community members.

Provided that original sounds and images are used in the digital materials, the community holds copyright for any materials that are developed and has control over access. Information can be as widely or narrowly distributed as is deemed appropriate. As the community remains in possession of the materials, updating and editing them is relatively simple. Digital technologies put the community in control of its language resources.

5.2.2 Rhizomes of Knowledge

Fernandez (2001) used ginger as a metaphor to analyze literacy practices, drawing on rhizome theory (Deleuze & Guattari, 2004). Ginger is an example of a rhizome: it grows underground, sending shoots to the surface. It has no centre and no edges, and new buds can grow in every direction, repeating the process indefinitely. Rhizomes form complicated webs with multiple layers of connection and reconnection. Rather than the unidirectional tree of knowledge, which grows upwards, rhizomes are non-hierarchical and plastic (Fernandez, 2001). For Fernandez, there are multiple literacies, webs of multiple cultural understandings and modes of texts.

The rhizome metaphor is useful to apply to knowledge production in the digital materials workshop. The use of technology resulted in a context where the binaries of teacher/learner, Ucwalmícwts/English, and old/new were blurred. The use of technology allowed participants to become knowledge producers, resulting in positive feelings towards using the target language. The user-friendly nature of digital photography enabled the participants to capture high-quality images with little training. As participants became more familiar with technologies, they began to take on different roles. Bridget moved quickly from her first use of the camera to directing participants in the shots, composing images. Hierarchies in the original plans broke down; everyone was a teacher and a learner, drawing from multiple cultural, linguistic, and technological knowledges, sometimes occupying multiple positions at the same time. The line between workshop participants and community members was also blurred. Although we attempted to implement a structure, the actual workshop series was flexible and fluid. People came when they were able to, contributing what they could.

My experience as a researcher demonstrates the rhizomatic aspects of knowledge production in the workshop series. Although planning was done collaboratively between Saw7 and Abra, and Abra, Pilar, and myself, I approached the project with reservations about being positioned as an expert during the series. I wanted participants to be at the centre of the project, rather than positioning my needs as the basis around which activities were developed. Although my needs as a graduate student were certainly factors in the project planning and facilitation process, I was surprised at the extent to which the processes established in our plans and proposals transformed once we began working together as a group. I found myself listening and observing rather than speaking. I was able to participate in the creation of the story, from the site visits to the actual construction, giving me the opportunity to learn from the other participants.

Although the production of a digital story that could be posted on the Ucwalmícwts *FirstVoices* site remained a project objective, the project became oriented around the constantly changing circumstances we were experiencing. The deliverables evolved as well. What began as a series of individual stories became a group project. Finally, the product became a single story in whose creation everyone participated. Quickly, the desires of the group began to inform the objectives. Learning occurred through interaction and experience. Knowledge transmission from Saw7 to the participants was conversational, and meaning was constantly negotiated.

The fluid nature of the workshop created a context wherein learning was experiential, driven by the pedagogic approaches of Saw7, who merged language, culture, place, and story as she taught participants about important places for the Lílwat Nation. Saw7 became a learner when Pilar or myself facilitated mini-lessons on digital photography and PowerPoint. She learned how to do simple photo editing and created a slide for the final story. While she occupied the learner position, behind the computer, she continued to contribute her Ucwalmícwts expertise to the group, supporting participants who were experiencing challenges. Although participants valued the flexibility of the materials development workshop, and the relaxed adaptive approach that resulted, maintaining this feel could present challenges if the materials development workshop is implemented within the structure of the language classroom. Time and process in this workshop was very different than time and process in a school setting, where lessons must be planned in detail, time must be considered, and there are limited opportunities for flexibility. Further, relationships between students and the teacher tend to be more hierarchical. This could limit possibilities for participants to assume multiple positions during the activity.

5.2.3 Negotiating Meaning

During the workshop series, participants operated in a multilingual environment. Ucwalmícwts and English were used; furthermore, some participants were introduced to technical vocabulary for the first time. In this context, no participant shared identical competencies in Ucwalmícwts, English, or “tech-talk.” For example, Saw7 was highly competent in Ucwalmícwts but less familiar with “tech-talk,” while Pilar was less competent in Ucwalmícwts but well-versed in “tech-talk.” My linguistic contributions were limited, as my role in the workshops was largely as an observer. Since the language context was heterogeneous, participants used a variety of communication and learning strategies to make meaning: translanguaging.

Translanguaging (García, 2009) is engaging in bilingual or multilingual discourse practices. García (2009) advanced two alternative models of bilingualism: recursive bilingualism and dynamic bilingualism. These models account for participants’ language use in the workshop. Recursive bilingualism describes a practice used in language revitalization contexts, where “speakers take pieces of past language practices to reconstitute new practices, with bilingualism itself, not monolingualism, as the starting point” (García, 2009, p. 378). Dynamic bilingualism “refers to the complex bilingual competence needed in some 21st-century societies” (p. 378). Inherent in the notion of dynamic bilingualism is multiliteracies: multiple, multimodal, dynamic language processes.

Participants demonstrated recursive bilingualism throughout the workshop. However, recursive bilingualism was most evident in the second workshop, when participants came together to construct the narrative. Participants ranged from fluent speakers to learners who were working on receptive language skills. The session began in English, as Pilar guided the group

through the process of developing the storyboard. When Saw7 took the lead, guiding participants through the creation of the narrative, language switched to Ucwalmícwts. English was also used; however, English was used to scaffold beginners' language learning. For example, Pilar's questions about transcribing the story in Ucwalmícwts created opportunities for language learning; group members discussed features of the written and spoken language. Questions might be posed in English, while answers would be in a blend of Ucwalmícwts and English.

As the narrative emerged, participants negotiated meaning. Although Saw7 is a fluent speaker, meaning making appeared to be joint and collaborative, and oral language was predominant. Participants brought Ucwalmícwts oral practices into the workshop, and through the creation of the digital story, new language practices emerged. The practices were additive, blending languages and technologies as the participants worked to develop the digital story. Participants employed code switching to shape the narrative. Language practices in the workshop aligned with Moore and Macdonald's (2013) observations in a Halq'eme'ylen Head Start program, where code-switching was concerned with the transmission of the Indigenous language. English was used to "enhance participants' confidence and empowerment" (p. 712). This was of particular importance because of the varying degrees of fluency amongst the participants.

Dynamic bilingualism was equally evident. Digital stories are multimodal, blending visual and audio modes of meaning. The process of developing the story was active and social, reflecting the decentralized, bottom-up processes of the workshop series. This suggests a multiliteracies or dynamic bilingual approach. Participants were "agents in their own knowledge processes, capable of contributing their own as well as negotiating the differences between one

community and the next” (Cope & Kalantzis, 2009, p. 172). Participants navigated between meaning making in Ucwalmícwts and in English, using multimodal representation.

The use of digital technologies impacted the relationship between participants and text. The participants were authors and audience, users and readers, of the text. The digital story employed oral speech, visual representation, and written language to present a narrative. While the three elements were parallel, essentially telling the same story, meanings were not the same. The written language was included to support listening skills. The visual representations grounded the narrative in a particular location and allowed users to visualize actions taking place in the story. The oral language component could bring the sounds of Ucwalmícwts to the user no matter their physical location.

5.3 Community-Based Language Materials Development

Community-based language materials development has a significant impact on language learning and meaning making. As discussed in Chapter Four, for Ucwalmícwts learners and speakers, language is written from the land. In this holistic understanding of language, the language is inextricable from the culture, the land, and the people. Developing language materials in a community setting allows for greater participation; in this case, Elders were able to drop in, based on their schedules, and work with other community members to create the digital story. Participants had the opportunity to learn experientially, learning language in context. Being able to see, touch, and smell reinforced the language the participants were learning through listening, speaking, reading, and writing. Brayboy and colleagues’ (2011) four Rs of critical indigenous research methodologies—relationality, responsibility, respect, and reciprocity—build on the work of Kirkness and Barnhardt (2001) and are a useful lens through which to examine community-based language materials development.

5.3.1 Relationality

Relationality, the notion that knowledge is relational and subjective (Brayboy et al, 2011), is at the heart of community-based materials development. Relationships were critical to the development of the Place Names Project. I was invited to participate in research in the community by an individual with whom I had worked in the past. I applied for approval to conduct research in the community before I began my formal ethics approval, following Lílwat Nation protocols. The project was designed in a way that was mutually beneficial for both the researcher and the community, and the relationship has continued, although the Place Names Project has ended. Through the project, I was able to foster relationships with individuals who are passionate about language revitalization, and with whom I hope to work in the future. As a researcher, I operated from a place of not knowing; however, by presenting myself as a student rather than an expert, I as well as everyone else was more comfortable. I deferred to the actual experts and listened and watched.

The Place Names Project was grounded in the community and developed collaboratively with the community. It was designed to develop a process and product that addressed community-identified needs—specifically, the shortage of Ucwalmícwts language learning materials. Community members from the Language and Culture Council and Ts’zil were active participants, frequently leading the workshops. In the spirit of relationality, participants reviewed and approved transcripts before they were analyzed. Orienting materials development in the community brought relationships to the forefront in a way that might not have been possible in an institutional setting.

5.3.2 Responsibility

Responsibility arises from relationality. As a researcher, I am accountable to the community I worked with. By grounding research in a community setting, a researcher's responsibilities are highlighted. Working in an institutional setting, it is possible to overlook the responsibilities a researcher has in relation to the knowledge that is created in a research project. In the case of the Place Names Project, the digital story that was created is the property of the community. I have agreed not to include data or analysis related to that text in my research. Although I was a collaborator in the production of the text, the knowledge contained in it belongs to the community, not to me; therefore, it would be inappropriate to use in a document where a third party owns the copyright. Because community-based materials development takes place in the community, developers are reminded of their responsibilities. Keeping materials in the community is also a step to protect intellectual property for Indigenous communities.

5.3.3 Respect

Community-based materials development should be undertaken from a position of respect. The Place Names Project was respectful of Lílwat language, culture, and values. The process was respectful of protocols; consequently, plans for the places the group would visit had to be changed, as the group was unable to perform duties that were mandatory before visiting a particular site. This respect for protocol is more difficult to manage when materials are developed outside of the community, as Elders with knowledge of protocols may not be able to participate. Information related to protocol may not appear in print, and knowledge of protocol may be restricted within a community. Without collaboration with a community, it is likely that researchers, particularly outsiders, may violate protocol. Like community-based research,

community-based materials development benefits from the participation of knowledge keepers. Because the community is a driving factor in materials development, it is likely that development processes will be respectful.

5.3.4 Reciprocity

Reciprocity, conceptualized as paying it forward, is also central to community-based materials development. Materials are developed with providing for the needs of the community as the central purpose. In the Place Names Project, participants took—we took—stories and knowledge from Saw7. We also used the land to create images for the digital story. However, the purpose of this taking was to give to and provide for others—specifically, Ucwalmícwts learners who access *FirstVoices*. More broadly, communities that are developing language materials can use the research, extending the possible benefits of the project.

Reciprocity of knowledge is also critical. While I collected participants' words and observations, Abra was able to undertake documentation work. By separating product from process, Lílwat was able to maintain ownership, control, access, and possession of its intellectual property, while I was able to access necessary data to complete my research. Rather than collecting collective Lílwat knowledge, I structured my analysis around my and individual participants' reflections. Generally speaking, developing materials in community makes it easier to maintain reciprocal relationships, as the community can retain ownership of the materials that have been produced.

5.4 Conclusion

Returning to the overarching question that guided this research project, digital storytelling does have potential for Indigenous language revitalization. Potential lies in the

process of creating digital stories, rather than the story itself, as participants utilize translanguaging (García, 2009) to construct meaning. When technology is introduced into the language classroom, in this case a language workshop, participants use an expanded repertoire of literacies related to oral language, images, and written language. These varied modes of representation introduce meanings that, while parallel with written text, are also different. By introducing technology, learners become authors and actors, rather than passive recipients of knowledge. Introducing technology to the materials development process significantly reduces the amount of time required to perform language documentation. Further, the multimodal nature of new media allows for expanded meanings and enables using to interact with the text.

Situating the materials development process within the community has a number of benefits. The most important arises from the centrality of the language community, its needs, and its ways of being to the materials development process. It is easier to create culturally responsive and representative materials when the project is grounded in the community. Further, community-based materials development facilitates the community's ownership, control, access, and possession of its intellectual property, in this case, language documentation. By grounding research and materials development in the community, researchers and developers move towards adapting a critical indigenous research methodologies (Brayboy et. al, 2011) approach to knowledge creation.

Chapter 6: Summary and Conclusion

This study supports the use of digital storytelling for both materials development and documentation purposes. Using digital technologies and new media allows teachers and language activists in under-resourced language communities to create low-cost, multimedia texts. This is particularly beneficial for First Nations, such as the Lílwat Nation, with populations in the thousands. A small team, composed of a technology specialist, a language teacher, and a fluent speaker, can utilize this approach to develop language materials. The turnaround time for creating these types of documentation projects is also quite low.

More importantly, creating materials in a community allows the community to exert control over the process. The community can determine which individuals are most suited for the project, based on their levels of expertise. The community can also develop the form and content of materials, based on the language needs of the community. If a number of departments are working on similar topics, as was the case for Lílwat, where both the Language and Culture and Lands and Membership departments were researching place names, interdepartmental collaboration can extend capacity beyond what a single department is capable of. Further, the use of digital archiving tools, as Lílwat is using, allows authorized individuals unprecedented access to collected knowledge in a searchable format, expanding the possibilities for what sorts of documentation and materials creation can be undertaken.

As a resource, digital stories support Indigenous language learning. Because the stories are multimodal, students' learning can be supported in a variety of domains. The end users of the digital story that was created in the workshop can listen to the voice of a fluent speaker read to them. They can repeat phrases as needed in order to reinforce learning. The visual components of

the story support learners, particularly beginners. Learners are able to follow the narrative without the use of an additional language, such as English, even if they are unable to understand all of the language. The visual imagery is particularly useful to support students' understanding of complex phrases that imply processes; in the case of this project, the images clarified that the phrase meant to step out of the water. Finally, the inclusion of written language reinforces the oral language. Users are able to see the language as they hear it. Digital stories as texts for learning provide more possibilities than paper-based texts because of their inherent multimodality. The images and text can be converted to a printable document, making the creation of booklets a possibility; this aspect is particularly useful in communities where access to technology is limited.

Digital stories are also highly portable, broadening the possibilities for use. For example, the stories can be used to bring the sounds of the language into the home, even if there are no speakers residing there. Digital stories can provide a focal point around which families can engage in language learning. This is especially true when interactive elements are built into the story. While digital stories cannot replace interpersonal, face-to-face language learning, study participants indicated digital stories were valuable for at-home practice and reinforcement, providing learners with opportunities for self-assessment. Digital stories may be used by learners living outside of the community who are unable to attend language classes, bridging the divide between learners living on and off a reserve.

The utility of using digital storytelling as a tool for Indigenous language learning extends beyond the product, the story, itself. Participants identified the process of creating the story, rather than the story itself, as the most valuable tool for language learning in the workshop. Creating a digital story requires that learners engage with others, in culturally appropriate ways,

in the community. In the case of this project, participants were able to visit unfamiliar areas and learn more about their territory. Getting out of the classroom enabled participants to engage with the language in a hands-on manner. In addition to learning about the place, participants were able to learn about the plants and animals in the target language, as well as gain information about the traditional and current uses of the sites that were visited. Multi-sensory engagement with the language supports learning; for example, it is likely that a student who has looked at, touched, and smelled a particular plant while learning about its uses, in context, will have a superior recall of the word than a person who has only encountered it in print.

The process of writing the story required that participants use complex literacy skills. Because of the group's heterogeneity with regards to language abilities, participants engaged in translanguaging (García, 2009) in order to create meaning. As participants took elements of past language practices and reconstituted new practices, they engaged in recursive bilingualism (García, 2009). Oral history was transformed into digital story. Code switching was used to support transmission of Ucwalmícwts. Rather than comprising content, English served to scaffold participants' understanding in the target language. The development of the story required participants to engage in dynamic bilingualism (García, 2009). By creating meaning through multiple modes, participants engaged oral, written, and visual literacies.

Finally, digital storytelling is grounded in relationality. The collaborative nature of the process requires trust between the participants. Collaboration also requires constant negotiation on the part of the participants. Brayboy and colleagues (2011) have asserted that knowledge is subjective, impacted by relationships with ourselves, others, and the world around us. The process of creating the digital story reinforces this. In order to create the story, participants had to build relationships with each other, community knowledge keepers, and the community and

territory, more broadly speaking. Participants in this project viewed relating, communicating with others in context, as a critical feature of language learning. Digital storytelling facilitates such a process, making it particularly suited for use in language classrooms, as well as for the basis of community-based materials development and language revitalization initiatives.

6.1 Limitations of the Study

Every Indigenous language community is unique, and communities have widely varying needs. Therefore, it may be difficult to draw conclusions from this study and apply the findings in a different language community.

I have extended the results to implications for language teaching in a classroom setting. However, the study was conducted on a voluntary, not-for-credit, open basis. Furthermore, all participants in the study were educators, and several had been working in language education since the 1980s. I would not hesitate to call the participants experts. With participants who are young learners, or learners who have experiences outside of the field of education, results could be wildly different. However, I feel that research supports the use of digital storytelling as a pedagogic tool outside of the Indigenous language learning context, so my findings may be applicable outside of the particular setting and circumstances in which the study was conducted.

6.1.1 Lessons Learned

When undertaking research, unanticipated and unexpected events may occur. The largest challenge for me involved timelines. While the university sets out the research process that students undertake, the fact that I was conducting research with a First Nations community meant that these timelines were not always possible or realistic. The community got back to me as quickly as was feasible; however, the approval and planning process with the community took the best part of a year. In a sense, the practices of the community and the university were not

aligned. Because students must continually pay tuition for the duration of their programs, this waiting period can be costly. For students on a low income, the inability of students to freeze their program while waiting for approval may make community-based research unfeasible.

More specifically, a number of challenges related to access and use of technologies arose. Some participants were less skilled and less comfortable with the computers, particularly when it came to using PowerPoint. In the context of the study, this was manageable, since a larger proportion of the group was quite skilled and confident. However, in a different setting, it might be beneficial to predetermine participants' comfort levels so as to ensure that appropriate supports are provided. Access to devices such as digital cameras was also quite limited. If I were to work on another digital story project, I would catalogue available devices in advance and pay closer attention to the versions of software that were installed on computers.

6.2 Suggestions for Future Research

At the present time, the school is many learners' primary domain of Indigenous language use. The findings of the study support the use of digital storytelling projects for language learning purposes. Extending this approach to the classroom requires further investigation. The participants in this study were educators with a passion for Ucwalmícwts. Participants were dedicated to speaking Ucwalmícwts and were comfortable with technology. Furthermore, the small participant size ($N = 4$) allowed facilitators to support participants who were experiencing challenges in both the language and the technology aspects of the workshop. A typical language class is more diverse, with a considerably higher number of students. Therefore, it would be advisable to pilot the study in a more formal, controlled setting before this approach was implemented at a school-based level.

Rather than relying on voluntary participation, as was the case in this study, this approach could be studied with a group of participants who are registered in a for-credit class. Perhaps the enthusiasm that participants demonstrated with regard to the workshop would not be duplicated in a student population. There were few linguistic or technical challenges in this study, which was a result of the education and employment backgrounds of the participants. In an Indigenous language classroom setting, where there is greater variation in student language abilities and familiarity with technology, it would be interesting to see whether the findings about language use would hold. Perhaps students would rely more heavily on English than the participants in the workshop. A group less familiar with the technologies used to develop the stories might also rely more heavily on English, as their focus shifted from learning the Indigenous language to learning about how to use PowerPoint, for example. For this reason, it would be beneficial to repeat the study with a class. If the language used by participants is primarily English, this sort of activity may not have application in an Indigenous language class.

Further, it would be beneficial to repeat this study with a larger participant sample group in order to test the feasibility of this project for language instruction in a classroom setting. Language classes often have 20 or more students. For a teacher to implement this sort of workshop, they must have the capacity to instruct and support students while also providing technological support. While this can be accomplished when the sample size is small, it may not be achievable with a larger participant group.

Finally, this study could include a diverse age range of participants. The study was limited to adults. However, it would be beneficial to see what the results are like with school-aged youths. Studying the technological preferences and typical use of digital media in this group could provide valuable information for language teachers and activists. For example,

would students prefer to develop the story using a different application? Examining school-aged youths' practices in learning with the digital story would also be useful—the researcher could examine to what extent the youths shared and interacted with the story and each other on social media. Youth could be recruited through their schools, and a variety of class levels could be included in the inquiry.

Bibliography

- Alfred, T. (2005). *Wasáse: Indigenous pathways of action and freedom*. Toronto, Canada: University of Toronto Press.
- Anderson, T., & Shattuck, J. (2012). Design-based research: A decade of progress in education research? *Educational Researcher*, 41(1), 16–25.
- Battiste, M. (2013). *Decolonizing education: Nourishing the learning spirit*. Saskatoon, Canada: Purich Publishing.
- Brayboy, B. M. J., Gough, H. R., Leonard, B., Roehl, R. F., II, & Solyom, J. A. (2011). Reclaiming scholarship: Critical Indigenous research methodologies. In S. D. Lapan, M. T. Quartaroli, & F. J. Reimer (Eds.), *An introduction to methods and designs* (pp. 423–450). San Francisco, CA: John Wiley & Sons.
- Brown, A. L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of the Learning Sciences*, 2(2), 141–178. doi:10.1207/s15327809jls0202_2
- Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council Canada, & Social Sciences and Humanities Research Council. (2014). *Tri-council policy statement: Ethical conduct for research involving humans*. Ottawa, Canada: Canadian Institutes of Health Research.
- Coast, K. (2015, March 23). First Nation land code voted down in Lil'wat: Elders, traditionalists keep to sovereignty and deny Canada's offer for "municipal" powers. *Vancouver Media Co-op*. Retrieved from <http://vancouver.mediacoop.ca/story/first-nation-land-code-voted-down-lilwat/33292>

- Collins, A., Joseph, D., & Bielaczyc, K. (2004). Design research: Theoretical and methodological issues. *Journal of the Learning Sciences*, 13(1), 15–42.
doi:10.1207/s15327809jls1301_2
- Constitution Act, 1982*. Retrieved from <http://laws-lois.justice.gc.ca/eng/const/>
- Cope, B., & Kalantzis, M. (2000). Multiliteracies: The beginnings of an idea. In B. Cope & M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures*. London, UK: Routledge.
- Cope, B., & Kalantzis, M. (2009). Multiliteracies: New literacies, new learning. *Pedagogies: An International Journal*, 4, 164–159. Retrieved from https://idt744.wikispaces.com/file/view/multiliteracies_copekalantzis.pdf
- Deleuze, G., & Guattari, F. (2004). *A thousand plateaus: Capitalism and schizophrenia*. New York, NY: Continuum.
- Fernandez, R. (2001). *Imagining literacy: Rhizomes of knowledge in American culture and literature*. Austin, TX: University of Texas Press.
- Fishman, J. A. (2001a). From theory to practice (and vice versa): Review, reconsideration and reiteration. In J. Fishman (Ed.), *Can threatened languages be saved?* (pp. 451–483). Toronto, ON: Multilingual Matters.
- Fishman, J. A. (2001b). Why is it so hard to save a threatened language?: A perspective of the cases that follow. In J. Fishman (Ed.), *Can threatened languages be saved?* (pp. 1–22). Toronto, ON: Multilingual Matters.
- First Peoples' Culture Council (FPCC). (2014). *Report on the status of B.C. First Nations languages 2014* (2nd ed.). Retrieved from <http://www.fpcc.ca/files/PDF/Language/FPCC-LanguageReport-141016-WEB.pdf>

- Galla, C. K. (2010). *Multimedia technology and Indigenous language revitalization: practical educational tools and applications used within Native communities* (Doctoral dissertation). Retrieved from ProQuest. (815237006)
- García, O. (2009). En/countering indigenous bilingualism. *Journal of Language, Identity & Education*, 8(5), 376–380. doi:10.1080/15348450903305155
- Godfrey, E. R. (2008). *The impact of FirstVoices on language revitalization in Alert Bay* (Unpublished master's thesis). Royal Roads University, Victoria, Canada.
- Hermes, M. (2012). Indigenous language revitalization and documentation in the United States: Collaboration despite colonialism. *Language and Linguistics Compass*, 6(3), 131–142. doi:10.1002/lnc3.327
- Hermes, M., Bang, M., & Marin, A. (2012). Designing Indigenous language revitalization. *Harvard Educational Review*, 82(3), 381.
- Hinton, L. (2003). How to teach when the teacher isn't fluent. In J. Reyhner, O. V. Trujillo, R. L. Carrasco, & L. Lockard (Eds.), *Nurturing native languages*. Flagstaff, AZ: Northern Arizona University.
- Hinton, L. (2007). Small languages and small language communities. *International Journal of the Sociology of Language*, 123, 177–191.
- Hinton, L. (2011). Language revitalization and language pedagogy: New teaching and learning strategies. *Language and Education*, 25, 307–318. doi:10.1080/09500782.2011.577220
- Hinton, L., & Hale, K. L. (2008). *The green book of language revitalization in practice*. Bingley, UK: Emerald.
- Hoadley, C. M. (2004). Methodological alignment in design-based research. *Educational Psychologist*, 39(4), 203–212. doi:10.1207/s15326985ep3904_2

- Indian Act*, Revised Statutes of Canada, 1985, c I-6, s.1. Retrieved from <http://laws-lois.justice.gc.ca/eng/acts/I-5/FullText.html>
- Iseke, J., & Moore, S. (2011). Community-based Indigenous digital storytelling with elders and youth. *American Indian Culture and Research Journal*, 35(4), 19–38.
- Kirkness, V. J., & Barnhardt, R. (2001). First Nations and higher education: The four r's—respect, relevance, reciprocity, responsibility. In R. Hayoe & J. Pan (Eds.), *Knowledge across cultures: A contribution to dialogue among civilizations*. Hong Kong, PRC: Comparative Education Research Centre, The University of Hong Kong.
- Lambert, J. (2002). *Digital storytelling: Capturing lives, creating communities*. Berkeley, CA: Digital Diner.
- Lee-Young, J. (2015, June 1). Three killed after alleged impaired driver hit cyclists on Sea-to-Sky Highway. *The Vancouver Sun*. Retrieved from http://www.vancouversun.com/Three+killed+after+alleged+impaired+driver+cyclists+Hi ghway/11097703/story.html?__lsa=30df-1318
- Lílwat Nation. (n.d.). *Increasing control over the Lílwat Nation's traditional territory*. Retrieved from <http://lilwat.ca/lands-resources/traditional-territory-stewardship/>
- Lílwat Nation. (2015). *Lílwat Nation land code outcome* [Web log post]. Retrieved from <http://www.lilwatnationlandcode.com/>
- May, S. (2005). Language rights: Moving the debate forward. *Journal of Sociolinguistics*, 9, 319–347. Retrieved from <http://www.bib.uab.es/socials/exposicions/dretllengua/docs/may.pdf>

- May, S. (2012). *Language and minority rights: Ethnicity, nationalism, and the politics of language*. New York, NY: Routledge.
- McCarty, T. L. (2013). Literacy and language revitalization. In C. A. Chapelle (Ed.), *The Encyclopedia of Applied Linguistics*. San Francisco, CA: John Wiley & Sons.
doi:10.1002/9781405198431.wbeal0730
- McIvor, O. (2012). *ikakwiy nîhiyawiyân: I am learning [to be] Cree* (Unpublished doctoral dissertation). University of British Columbia, Vancouver, Canada.
- McNamara, T. (2011). Language assessment as social practice. In L. Wei (Ed.), *The Routledge Applied Linguistics Reader* (pp. 353–363). New York, NY: Routledge.
- Moore, D., & Macdonald, M. (2013). Language and literacy development in a Canadian native community: Halq'eméylem revitalization in a Stó:Lō head start program in British Columbia. *The Modern Language Journal*, 97(3), 702–719. doi:10.1111/j.1540-4781.2013.12028.x
- Moore, P., & Hennessy, K. (2006). New technologies and contested ideologies: The Tagish FirstVoices project. *The American Indian Quarterly*, 30(1), 119–137.
- New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard educational review*, 66(1), 60–92.
- Obonyo, V., Troy, D., Baldwin, D., & Clarke, J. (2011). Digital Smartpen technology and revitalization of the Myaamia language. *Journal on Computing and Cultural Heritage*, 4(4), 1–11. doi:10.1145/2050096.2050097
- Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in education and the social sciences (3rd ed.)*. New York, NY: Teachers College Press.

- Shelby-Caffey, C., Úbéda, E., & Jenkins, B. (2014). Digital storytelling revisited: An educator's use of an innovative literacy practice. *The Reading Teacher*, 68(3), 191–199.
- Smith, G. (1992). Research issues related to Maori education. In *The Issue of Research and Maori* (Monograph 9). Auckland, New Zealand: Research Unit for Maori Education, University of Auckland.
- Smith, L. T. (1999). *Decolonizing methodologies: Research and Indigenous peoples*. Dunedin, New Zealand: Zed Books.
- Thornberg, R. (2012). Informed grounded theory. *Scandinavian Journal of Educational Research*, 56(3), 243–259.
- Wang, F., & Hannafin, M. J. (2005). Design-based research and technology-enhanced learning environments. *Educational Technology Research and Development*, 53(4), 5–23.
doi:10.1007/BF02504682
- Warschauer, M. (1998). Technology and Indigenous language revitalization: Analyzing the experience of Hawai'i. *Canadian Modern Language Review*, 55(1), 139–159.
doi:10.3138/cmlr.55.1.139
- Willox, A. C., Harper, S. L., Edge, V. L., “My Word”: Storytelling and Digital Media Lab, & Rigolet Inuit Community Government. (2012). Storytelling in a digital age: Digital storytelling as an emerging narrative method for preserving and promoting Indigenous oral wisdom. *Qualitative Research*, 13(2), 127–147.

Appendices

The questionnaire developed to generate participant profiles has been included in Appendix A.

The prompts used for the semi-structured interviews are included in Appendix B.

Appendix A

Demographic Info: Profile Development

Please answer the following questions.

1. How long have you been learning Ucwalmícwts? (at home, in school, in community)
 - a. 0-4 years
 - b. 5-10 years
 - c. 11-15 years
 - d. More than 15 years
2. How confident are you using the technologies we worked with for materials development?
 - a. Very confident
 - b. Confident
 - c. Neutral
 - d. Unconfident
 - e. Very unconfident
3. After developing Ucwalmícwts materials, my interest in learning the language is:
 - a. Greater than before
 - b. About the same level of interest as before
 - c. Less interested than before
4. After developing Ucwalmícwts materials, my confidence using and working with the language is:
 - a. Greater than before
 - b. About the same as before
 - c. Less interested before
5. When I was creating the language materials, I found myself:
 - a. Thinking mostly in Ucwalmícwts
 - b. Thinking in a mix of Ucwalmícwts and English
 - c. Thinking mostly in English
6. When I communicated with others in the workshop, I found myself:
 - a. Communicating mostly in Ucwalmícwts
 - b. Communicating in a mix of Ucwalmícwts and English
 - c. Communicating mostly in English
7. During this workshop, my biggest challenge was:
 - a. Working with Ucwalmícwts
 - b. Working with the technology
8. I would characterize digital materials development as:
 - a. Very easy
 - b. Easy
 - c. Neutral
 - d. Difficult
 - e. Very difficult

Appendix B

Indigenous Language Revitalization and Digital Materials Development

Interview Prompts

Interview One (History)

- Describe what led you to register in the digital materials development workshop.
- Do you have any previous experience with materials development? Please explain.
- Describe your current use of technology for language learning purposes.
 - Which resources are you accessing (*FirstVoices*, audio/video recordings, apps, computer-based language learning)?
 - How often do you use these resources?
 - What do you like/dislike about using technology for language learning?
 - What are some of the possible benefits or drawbacks of using this type of technology for language revitalization purposes?

Interview Two (Contemporary Experience):

- What was it like for you to be a student (or facilitator) in the materials development workshop?
 - Did you find yourself speaking primarily in English or in Ucwalmícwts? Please explain.
 - Did you find yourself thinking primarily in English or in Ucwalmícwts? Please explain.
 - Would you characterize the language component or the technical component of the workshop as being more difficult? Why?
 - Can you think of a context where you would be more likely to use Ucwalmícwts while developing materials? Please explain.
- Can you think of any benefits that arise from using technology for materials development purposes? Please explain.
- Can you think of any drawbacks that arise from using technology for materials development purposes? Please explain.
- Can you think of any benefits from developing language materials in a community based setting? What might these be?
- Can you think of any drawbacks to developing language materials in the community? What might these be?

Interview Three (Reflection on Meaning):

- What are your future goals for learning and speaking Ucwalmícwts? Please explain.
- How do you see yourself using the skills you developed through the workshop in the future? Please explain.
- Did developing materials impact your perception of yourself as a speaker/learner of Ucwalmícwts? Please explain.