

Ka·k̓lukaqwała qakikaxuʔmik nas ʔamaks (Our language was born from the land)

A Land-Based Ktunaxa Pronunciation Guide

By

Aiyana K̓lawatinak Pałki· Sa'tahtaki Twigg

Bachelor of Arts, University of British Columbia, 2022

A Project Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

MASTER OF INDIGENOUS LANGUAGE REVITALIZATION

in the Faculty of Indigenous Education

© Aiyana K̓lawatinak Pałki· Sa'tahtaki Twigg, 2026

University of Victoria

All rights reserved. This Project may not be reproduced in whole or in part, by photocopy or other means, without the permission of the author.

We acknowledge and respect the Lək̓ʷəŋən (Songhees and X̱wsep̓səm/Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

Ka·k̄lukaqwała qakikaxuʔmik nas ʔamaks (Our language was born from the land)

A Land-Based Ktunaxa Pronunciation Guide

By

Aiyana K̄lawatinak Pałki· Sa'tahtaki Twigg

Bachelor of Arts, University of British Columbia, 2022

Supervisory Committee

Dr. Ewa Czaykowska-Higgins, Supervisor

Department of Indigenous Education & Humanities

Dr. Belinda kakiyosēw Daniels, Committee Member

Department of Indigenous Education

Abstract

This project explores how Ktunaxa sounds can be understood, taught, and learned through a Ktunaxa worldview grounded in land, spirit, and the belief of *ʔa·kxam̓is q̓api qapsin* (all living things). Responding to documented challenges in Ktunaxa language learning, particularly related to pronunciation, sound discrimination, and sound–symbol correspondence, this research moves beyond technical phonetic approaches to center land-based, ceremonial, and relational ways of knowing. Guided by a Ktunaxa research methodology, *Kitqawxantiṭ ʔa·kuk̓p̓lutaṭ* (Gathering Juniper), the project understands research as a living, embodied, and spirit-led process. Methods included land-based listening and observation within *ʔamakʔis* Ktunaxa (Ktunaxa territory), metaphor development grounded in relationships with animals, plants, and place, relational verification with a language mentor, and the creation of pedagogical resources. The outcomes of this research include: (1) a 32-page land-based Ktunaxa pronunciation guide, (2) thirteen land-based articulation videos for sounds commonly identified as challenging for learners, and (3) a website that houses videos and audio recordings to support accessibility. This project demonstrates that Ktunaxa sounds are not abstract linguistic units, but living expressions born from land, ceremony, and ancestral relationships. By re-centering sound as relational and ceremonial, this work contributes to Indigenous language revitalization scholarship and offers a culturally grounded model for teaching pronunciation that supports healing, identity, and long-term language revitalization, while providing practical insights for the fields of Indigenous Language Revitalization (ILR), Indigenous Language Learning (ILL), Indigenous Education, and pronunciation teaching.

Table of Contents

Supervisory Committee	ii
Abstract.....	iii
Table of Contents	iv
List of Figures.....	vi
List of Tables	vi
Dedication	vii
Acknowledgements	viii
1. Introduction	1
2. Situating this Project.....	3
2.1 Positioning Myself: Qała ku ?in? (Who am I?)	3
2.2 Ktunaxa & Ksanka ?aqłsmaknik & ?amak?is Ktunaxa: The Ktunaxa and Ksanka People and Their Land	12
2.3 Ktunaxa ?a·kłukaqwum (Ktunaxa Language)	16
3. From Written Whispers to Collecting Sounds: Background Research.....	21
4. Research Topic & Questions	25
5. Ksukit hakit wičkifin kupxał (To Carry Knowledge Forward):	26
Knowledge Bundle	26
5.1 Ktunaxa Literature, Sounds, and Existing Pronunciation Resources	27
5.2 Defining Pronunciation and a Historical Review of Pronunciation in English as a Second Language	33
5.3 Pronunciation in Indigenous Language Teaching & Learning	38
5.4 Ka·kłukaqwała qakikaxu?mik nas ?amaks: Our Language was Born from the Land: Environmental Totality	43
5.5 Land-Based Pedagogy: Yaqal hankatitiki na ?amak - Our People Care for the Land, the Land Cares for Our People.....	47
5.6 Summary and Research Gaps	50
6. Kıtqawxantit ?a·kukpłulał (Gathering Juniper) Methodology	52
7. Collecting Sounds in ?amak?is Ktunaxa: Methods	55
7.1 Siłnukni ?a·kukpłulał: Seeking Juniper (Sound Selection)	56
7.2 Kıkini ?a·kičkakak: Selecting Branches (Metaphor Development and Sound Testing)..	57
7.3 Kıtqawxantit ?a·kukpłulał: (Land-Based Listening and Embodied Observation).....	58
7.4 ?itmuku?ni ?a·kukpłulał: (Relational Verification and Audio Recording).....	60
8. Kti·kxawicikimik (Bundling the Sounds): The Project Offering.....	61

8.1 A Basket of Sounds: Articulation Videos and Metaphors	61
8.2 Pronunciation Guide	64
8.3 Audio, Website, and Access	69
9. Teachings & Reflections.....	72
9.1 How to Effectively Utilize the Guide	74
9.2 Limitations & Gaps.....	76
9.3 Next Steps	77
10. Conclusion	80
References.....	83
Appendix A.....	92

List of Figures

Figure 1. Yaqit ʔa·knuq̓iʔit First Nation. Reproduced from Columbia Basin Trust, Basin Stories	7
Figure 2. Ktunaxa ʔaq̓smaknik dancing. Reproduced from Elk Valley Culture.	9
Figure 3. Ktunaxa Traditional Territory (Shields, 2019, ed. by Aiyana Twigg, 2023)	16
Figure 4. Kootenay Indian Residential School by Author.....	18
Figure 5. Ƙitqawxantił ʔa·kukp̓lulal: A Ktunaxa Research Methodology by Author	54
Figure 6. A Basket of Ktunaxa Sounds by Author	63
Figure 7. Page 19 of Collecting Sounds in ʔamakʔis Ktunaxa by Author.....	66
Figure 8. Page 25 of Collecting Sounds in ʔamakʔis Ktunaxa by Author.....	67
Figure 9. Illustration: Collecting Sounds in ʔamakʔis Ktunaxa by Darcy Luke.	69

List of Tables

Table 1. Ktunaxa Letters and Community Description	30
Table 2. Example of Sound, Words & Phrases, Land-Based Metaphor, Video Concept, Location, and Timing.....	57
Table 3. The Thirteen Sounds and Their Metaphors	62
Table 4. Sound Categories and the Land-Based Metaphors	64

Dedication

Kəxat qaki·kam ʔa·kitwi·nis, ʔakitwi·niskit
Kinə ɕmakwiɕkinkit ʔa·ktukqaʔnis, Ktunaxa ʔa·ktukaqwum
Niʔ ya·qat haqwumki niʔ pikak
Yaqaʔ ʔupxaʔki, yaqaʔ qanikitɕiʔki nupika
ʔat kin ɕxat ʔitki·kiɕ ʔat ʔa·qaʔnis
Qapi ʔaqtsmaknik, na kin ʔin Ktunaxa ɕ Ksanka
Tax na kin ɕxat ɕinawiɕknikitknaʔit
Na kin ʔuquwakakiniʔ kin ɕxat ʔin kin ɕxat ʔitki·kɕawas
ʔat kin ɕxat qsamunatawas
Maʔɕ kuʔ qu·qakit ʔiskaxmitala kakikit ʔaqtsmakniknala.

*It will come from your heart, hearts
Hold strongly onto your language, Ktunaxa language
The way of life in the past
How we know and believed in the spirits
You will teach your children
All people of the nation Ktunaxa and Ksanka
As you go into the future
You are sworn in to teach us
To help us
To hold on to our lifestyle, heritage, language, and culture.*

By: ya·qat ɕxaki Maktit



This is dedicated to all Ktunaxa and Ksanka ʔaqtsmaknik, past, present, and future, the land that birthed us, ʔamakʔis Ktunaxa, all nupikas, ʔa·kxamʔis qapi qapsin, and ka·ktukaqwatla.

Acknowledgements

Hu qalwi·ni xma ku sukilq̄ukamał ya·qasinknapki, ka ma, ka su, ka titi, ka papa, ka nufʔaqna, ʔal ka·kniknamu, ka·kiklu, kitkik ɕałka, Malu, ʔaki Hilly ɕpułwi·kɕapni.

First and foremost, I am grateful to all those who have walked alongside me in this life and guided me with their support, strength, love, and encouragement. This acknowledgements page could easily be hundreds of pages long, but instead, I will speak from the heart and get straight to the point.

Ya·qasinknawaski, Nupika, ka ʔa·kłak (*Creator, Spirits, & My Ancestors*):

I give my deepest thanks to the Creator and the Spirits for gifting me my language and believing in my spirit, even during the times when I did not believe in myself. I thank my ancestors for their strength, resilience, and guidance, which have carried me through this journey and continue to walk with me every day.

Ka·kuq̄likamał (*My family*):

I am deeply thankful to my parents for their unwavering support and love throughout my academic journey, and for instilling pride in me from a young age. The many phone calls we shared are what carried me through difficult moments. I thank my partner for his kind spirit, patience, and willingness to listen. You have been beside me since the beginning of my undergraduate studies, growing alongside me, and I draw strength from knowing you are always by my side. I thank my grandma for teaching me our ways over all these years, for the many visits, laughter, and teachings we have shared. I am grateful to have such a badass, strong matriarch to look up to.

Kwilqapkɕap (*My Elders*):

I wish to especially thank my mentors, Malu and Hilly. When we first began working together three years ago, I was unsure of what to expect and how to navigate this new relationship: me as the apprentice and you as my mentors. Over time, our bond has grown stronger through our shared passion and love for the Ktunaxa language. Without your endless support, careful corrections, and deep knowledge, I would not be where I am today. This work is largely for you, and for the continued life and spirit of our language.

ʔal kitkik ɕałka (*My Supervisor & Professors*):

I extend my sincere gratitude to my supervisor, Dr. Ewa Czaykowska-Higgins. Your guidance, encouragement, and support throughout this project have been instrumental. Thank you for your teachings in linguistics, which helped shape and guide this work, and for being a true model of what it means to be an Indigenous ally. I feel incredibly fortunate to have had you as a supervisor, professor, and mentor as you approach your retirement. I also thank my committee member, Belinda kakiyosēw Daniels, and I am grateful to all of the ILR professors who taught with patience, shared their knowledge generously, and encouraged me to think more deeply about my own Indigenous and ancestral ways of knowing.

Ka·qłsmaknikmał (*Classmates*):

I must, of course, thank my MILR 7th cohort mates. We began this journey together, and we finished it together. On the first day of the program, I arrived late due to a cancelled flight,

walking through the doors nervous and unsure of what lay ahead. What I found was a community I am profoundly grateful for. Being surrounded by such inspiring Indigenous language warriors has been an honour. Thank you for sharing your stories, your knowledge, and your strength with me. I remember thinking, “Everyone here is so brilliant, how will I ever keep up?” Thank you for becoming another community I could lean on throughout this journey.

Ka·kiktu ɛ Ya·qakil haqwumki (*My community, past, present, & future*):

Finally, I thank my community, the Ktunaxa Nation, our elders, relatives, and Ktunaxa language warriors, past, present, and future. Without the documentation of our stories and language, I would be lost. Without the strength and resilience of our people today, I may not be where I am. And to the future generations who will carry the fire of our language forward, I thank you. I also extend my gratitude to the many linguists I spoke with who research our language. Your insights and knowledge have supported my learning and contributed meaningfully to this work.

I could honestly go on and on, but I promise I will end it here! Texas!

Hakikini santispli ka·kluqaqwała kɛxat nupslatil haqaps!!

Keeping the Spirit of Our Language Alive

Language Care, Responsibility & Acknowledgement

This work is grounded in ʔamakʔis Ktunaxa and is shaped by Ktunaxa land-based ways of knowing, listening, and learning. I acknowledge the Ktunaxa Nation and the community of yaqit ʔa·knuqtiʔit, whose lands and teachings guided this work.

I offer deep gratitude to the language speakers, teachers, and knowledge holders whose voices, presence, and teachings made this work possible.

I would like to acknowledge that this project does not represent a single authoritative or complete way of speaking Ktunaxa. Ktunaxa, like all living languages, is relational and diverse, and sound production may vary across speakers, families, and communities.

1. Introduction

Have you ever wondered how the sounds of a language came to be? When we speak, do we pause to consider how our ancestors created these sounds, or notice how they reflect the land, animals, plants, and all living things? This project explores how teaching and learning Ktunaxa sounds can be guided by a Ktunaxa worldview rooted in land, cultural identity, and the belief of *ʔa·kxamìs q̓api qapsin* (All living things). Language is not simply a technical system of sounds; it is a sacred ceremony that embodies spirit, history, and connection to the land. Rooted in my Ktunaxa worldview, this project centers Ktunaxa beliefs, practices, land, and spirit as a pedagogical tool that guides the teaching process.

This work builds on previous research I conducted during my undergraduate degree at the University of British Columbia (UBC). I conducted conversational interviews with Ktunaxa Elders, youth, and linguists as part of my study *Written Whispers: Ktunaxa Perspectives on the Writing System*, supervised by Dr. Mark Turin. This research explored the attitudes and ideologies that Ktunaxa speakers hold regarding the writing system. I identified two central challenges: First, learners struggled to accurately produce and hear Ktunaxa sounds; and second, spelling conventions such as the glottal stop (ʔ), double consonants (ʈ vs. ɥ), and word separation were applied inconsistently. Out of the eleven interviews I conducted during that study, the majority said that sounds are the most difficult to teach and learn. Language learners typically cannot differentiate the differences between consonant stops and their ejective counterparts and have trouble producing the hard sounds of Ktunaxa (Guntly, 2014; Twigg, in preparation). This impacts learners who feel like they are not “linguistically adequate” in speaking Ktunaxa (Guntly, 2014). Furthermore, there is no current unified way of teaching the Ktunaxa sounds,

which has led to variation in terms of pronunciation, which in turn impacts speakers' spelling (and spelling then impacts pronunciation).

In response to that research, this project aims to fill that gap by creating land-based Ktunaxa pronunciation resources to support accurate pronunciation, cultural understanding, and long-term language revitalization. Moving beyond technical and linguistic explanations of Ktunaxa phonology, this project consists of three parts: (1) a 32-page guide for teaching Ktunaxa sounds using land-based and culturally grounded metaphors and images; (2) thirteen videos featuring land-based articulation exercises (Finstad, 2022) for Ktunaxa sounds that are more difficult to produce, ʔ, ç, ç̣, k, ḳ, t, ṃ, ṇ, p̣, q, q̣, ṭ, and x; and (3) a website that houses the videos and audio recordings to provide learners with easy access. This project aims to nurture healing and pride among Ktunaxa language learners by reconnecting them to ancestral teachings, land, ceremony and ʔa·kxaṃis q̣api qapsin (All living things).

2. Situating this Project

2.1 Positioning Myself: Qala ku ?in? (Who am I?)

I have often grappled with my identity as an Indigenous woman. From the time I was a young child, then into high school, and now university. The spaces that I was in did not see me for who I am, but merely the color of my skin, and the assumptions and stereotypes associated with my ‘Indian’¹ identity. I have had to unlearn, re-learn, unlearn, and re-learn who I am over the course of 25 years. I have had to re-learn what my identity is, and how I want to *do* things. Things such as researching and learning. In positioning myself within this research project, I acknowledge my Indigenous identity, where I come from, and what I believe. In an act of decolonizing research, it is my duty to uphold relational accountability (Kovach, 2021; Wilson, 2008). As Wilson (2008) reminds us, to understand the work, one must first understand who the researcher is. In this spirit, I begin by introducing myself. My grandma always told me that when one speaks the language, they can feel a profound connection to the land itself. It is the memory of our blood and the memory of our land, carried in the soil where my ancestors’ footsteps have dissolved. It is almost as if their rich knowledge and wisdom are nutrients to support the earth’s ecosystem. Just like the Salmon spawning process. I introduce myself to you. This includes who I am, where I come from, and my family. This allows the spirits, ancestors, and people of the land to know that I am here, and who I am.

Ki?su?k kyukyit. Hu sukik?ukni ku ?upxniskitni. Hu qaktik Aiyana
Twigg tak Sa’tahtaki. ?at qat ?atapni Ktunaxa K?awatinak Pa?ki. Hu
nini Ktunaxa ? Wanmuqantik. Hu qaki·kaxi yaqit ?a·knuq?it. Ka ma
qaktik Leanna Gravelle. Nini Ktunaxa ? qaki·kaxi Yaqit ?a·knuq?it.
Ka su qaktik Chris Twigg. Nini Wanmuqantik ? qaki·kaxi Kainai. Ka

¹I write Indian in quotation marks here to express the terms that I was called. There have been many terms that have been used to call us (i.e., Indian, Aboriginal, First Nations, Native Americans, Indigenous). These terms have typically been used to group all Indigenous people together. However, all of our Indigenous communities across Turtle Island are diverse and specific to our people. For the sake of clarity though, hereafter I refer to myself as Indigenous with a capital I. I will use Ktunaxa and Niitsitapi to recognize my identity more specifically.

titi qaklik Roberta Gravelle. Nini Ktunaxa e qaki-kaxi ?aqam. Ka papa qaklik Pat Gravelle. Nini Ktunaxa e qaki-kaxi Yaqit ?a-knuqhi?it. Ka titi ma qaklik Diane Twigg. Nini Wanmuqantik e qaki-kaxi Kainai. Ka papa ma qaklik Christopher Twigg. Nini Wanmuqantik e qaki-qaxi Kainai. ?al ka ealaka qaklik Mary Mahseelah e Elizabeth (Hilly) Ignatius.

Hu nini kei-kat kituqhiqal qu University of Victoria. Hu wifinqaemuni Ktunaxa ?a-klukaqwum. Hu nitkini qapsins ?aqismaknik ?a-klukaqwum. Hu nitki-keik Ktunaxa. Hu nukini ?itki-keik Ktunaxa ?a-klukaqwum qaykitwunwunwu nataniknana.

Miksan ein pa-mik ?at hu exani Ktunaxa. Hu sqati-kinmik ku e nitki-keik Ktunaxa. Hu qa qalwi-ni xmak ki?in kiskaxmitil. Nisi?hknina?apni. Ka?a ?at hu qalwi-ni xma ku qa-qaskin miksan hu exal qa pasini.

Hu sakit nitki-keik ka-klukaqwala hu nisti ni? pikaknik, ya-qasinknawaski, ka ?a-knik, ka-kiktu, ?aki na exal ya-qanakit haqwumki.

Hu qalwi-ni ku e sakit nitkikheik ?aki ku e nitki-kealaka Ktunaxa. ?a-qanmiyit ?at hu nakukini ku e hi? exa Ktunaxa! Texas!

Greetings. I am happy to “see” all of you. I am a proud Ktunaxa citizen from yaqit ?a-knuqhi?it (Tobacco Plains) on my mother’s side. I am Niisitapi (Blackfoot), registered Kainai (Blood Tribe), Treaty 7 territory on my father’s side. I grew up within ?amak?is Ktunaxa (Ktunaxa territory), in yaqit ?a-knuqhi?it from birth until the age of 18 when I moved to university. My mother is Leanna Gravelle, Ktunaxa from yaqit ?a-knuqhi?it. My father is Chris Twigg, Niisitapi from Kainai. On my mother’s side, my grandmother is Roberta Gravelle, who is Ktunaxa from ?aqam (St. Mary’s), and my grandfather is Pat Gravelle, also Ktunaxa, from yaqit ?a-knuqhi?it. On my father’s side, my late grandmother is Diane Twigg, Niisitapi from Kainai, and my late grandfather is Christopher Twigg, also Niisitapi from Kainai.

Since I grew up in yaqit ?a-knuqhi?it, I learned directly from Elders and Knowledge Keepers our Ktunaxa traditional practices, ceremony, songs, stories, and some of our language. I

did not learn much about my Blackfoot identity, language, or culture, but I hope to learn sometime soon. I have had many mentors in my life, but I have worked closely with Mary Mahseelah, Elizabeth (Hilly) Ignatius, Dr. Violet Birdstone, and my grandmother, Roberta Gravelle. These are the ladies who have taught and mentored me, and where my knowledge stems from. I carry a Ktunaxa worldview that highlights the importance of reciprocity, relationships, harmony, balance, stewardship, and responsibility.

The name I was given at birth is Aiyana; I carry both a Ktunaxa name, Kławatinak Pałki and a Blackfoot name Sa'tahtaki, which both mean 'woman on the other side of the mountain.' I was given these names to acknowledge both my Ktunaxa and Niisítapi identities. Having traditional names provides me with immense strength and power. Ka ʔała (my friend) Kaqwił kamnuqłu ʔa·knuqyuk (Alexis) shared with me that it is incredibly powerful to be known by our traditional names because there are many Aiyana's in the world, but only one Kławatinak Pałki and Sa'tahtaki. In this way, the Creator, Spirits, and Ancestors will recognize who I am. However, I do enjoy my name Aiyana, because it supposedly² has a Cherokee origin meaning 'forever blossoming.' Although it is not Ktunaxa or Blackfoot, this is the name I have known myself all my life, and I believe I embody its spirit 'forever blossoming.' I am not static, and my life is not linear. I am forever changing and learning new things. I crave new experiences, new knowledge, and continuous growth. I am proud to have both a Ktunaxa and Blackfoot name. But I am also proud of Aiyana. I am proud of Aiyana in her lifetime of what she had to overcome, what she has learned, and who she *is* becoming. In positioning myself in this research, my name

² I write "supposedly" because this has not been confirmed by any Cherokee speakers. This is something that I have been told and read online. However, that does not mean it is factual. Since I was a young girl, I was told this, so I feel as though I am connected to this idea.

is Aiyana, I carry the Ktunaxa name Kławatınak Pałki· and the Blackfoot name Sa'tahtaki. I am a Ktunaxa and Niisítapi woman, and I come from yaqit ʔa·knuqłiʔit.

Now that you know a bit about who I am, I want to share part of my childhood experience. This is important, as it has deeply shaped my relationship with my language and culture, and ultimately led me to pursue a Master of Education in Indigenous Language Revitalization (MILR) at the University of Victoria.

I attended Kindergarten to Grade 12 in the United States, in a small town called Eureka, Montana. Many people ask how this was possible since I lived in Canada and am a Canadian citizen. Let me explain. I grew up in yaqit ʔa·knuqłiʔit, one of the smallest Ktunaxa communities, nestled in the southeastern interior of British Columbia (BC), Canada. Our community is surrounded by plains-like fields, with the Rocky Mountains in our backyard, a beautiful, small, and secluded reserve with a total population of about 50 people. We are located about an hour from Cranbrook and Fernie, BC. We are also situated only five to ten minutes from the Canada–U.S. border. Just across the border is a 15-minute drive into Eureka, Montana. Myself, along with my siblings and cousins crossed the border every single day to attend public school in Eureka, until we graduated from Grade 12. We were able to do this through the Jay Treaty.³ Because of this, I could cross the border with my Indian Status card every day to attend school.

³ In 1794, the United States and Great Britain signed the Jay Treaty, which recognized the right of Indigenous peoples born in Canada, referred to as “American Indians” in the agreement, to freely cross the U.S.-Canada border. This freedom of movement applies to purposes such as work, study, travel, and immigration. These rights are upheld in both the original treaty and in U.S. federal legislation (Michigan Indian Legal Services, n.d.; Standing Senate Committee on Aboriginal Peoples, 2016).



Figure 1. *Yaqit ʔa·knuq̓iʔit First Nation. Reproduced from Columbia Basin Trust, Basin Stories*

Growing up in yaq̓it ʔa·knuq̓iʔit was freeing. I ran barefoot, walked the dirt roads, and had the forest as my backyard, knowing I was safe in the tranquility of the Earth, like a mother’s warm embrace. I remember one day going to pick naqam̓cu (bitterroot) with my grandma, Mary, and Hilly. One of the many things that we did together. They told me that the first time you pick bitterroot, you must eat it, right from the ground. I remember thinking, “Really, with dirt still on it?” But I did as I was told. It lived up to its name, it was bitter, and they had a good laugh at my reaction. These are memories I return to often: a time when I felt carefree, and happy. However, attending school in Eureka marked one of the most difficult periods of my life.

At the young age of ten, I thought that hiding my Indigenous identity would protect me. I remember quite vividly having this conversation with my mother. I said, “Mom, I don’t want to learn the language or culture anymore. I don’t want you coming into my class to teach the

language anymore. I'm done with it." I know hearing those words broke my mother's heart because she raised me to be proud of who I am. And yet, despite that, she could not protect me from the racism, discrimination, or ignorance I would experience in school, from both teachers and classmates alike. She wanted me to be proud of who I am and not go through what she, my grandparents, and my father had experienced. All four of my grandparents and my father attended Indian Residential School (IRS). My grandmother is a silent speaker of Ktunaxa, and my grandfather chose not to learn the language. As a result, my mother was not taught Ktunaxa. Similarly, my father chose not to learn Blackfoot. I am a first-generation residential school survivor, and I am only 25 years old. I did not learn either of my languages when I was growing up; nor did I want to. For years, from Grade 5 to 11, I hid my Indigenous identity and would unwillingly attend ceremonies in my community. However, I realized very quickly that I could never escape who I was. Throughout my teenage years, I experienced an identity crisis and struggled with my mental health.

I was visited by my ancestors when I was hiking on the land one summer before my 12th Grade year. During this visit, they spoke to me. They did not use words, but rather it was a feeling that I understood. I was told: "This is where you are meant to be." These were the whispers of my ancestors telling me that being on the land is where I belonged, and by being on the land I would understand myself. From there began my healing journey. From hating my identity, to loving myself, my culture, my ancestors, and the land. While I had tried my whole life to fit into a Eurocentric society, I already had a community of people who had kindness, patience, and acceptance for me. Today I understand that my language is truly a gift given to me by Ya·qasinknawaski (Creator), and it is my duty to continue to speak my language.



Figure 2. *Ktunaxa ʔaqʔsmaknik dancing. Reproduced from Elk Valley Culture.*

When I began 12th grade, I felt a responsibility to my ancestors and my community. I later learned through a conversation with my mother that this responsibility would take the form of supporting our language. At the time, I was not sure what that path would look like, but I knew I could contribute through education. I decided to pursue a degree in linguistics to support my community through language work. Because our language is a language isolate, meaning it is not related to any known language, and the number of speakers is critically low, with approximately 20 speakers remaining, I believed a linguistics degree would equip me with the skills needed to understand language structure and support documentation. However, as I began this journey, I quickly realized that linguistics was not the right fit for me. I struggled with its highly technical approach, which separates language from the culture and people who speak it, breaking it into small parts and, in the process, losing the cultural, spiritual, ceremonial, and land-based aspects that make our language unique. I was fortunate to later learn about the field of Indigenous Language Revitalization (ILR), as well as linguistic anthropology, and I immediately

recognized that these approaches aligned far more closely with my values and ways of understanding language.

I graduated with a Bachelor of Arts from the University of British Columbia in 2022, with a double major in First Nations and Endangered Languages (FNEL) and Anthropology. Through my studies, I have contributed to Ktunaxa language revitalization through a range of projects, including developing an animated Ktunaxa oral story, *Q̓uçaç ç̓ Tawiçikxu*, creating an intergenerational community platform (@KtunaxaPride), and developing various language games and learning resources. I have been learning the Ktunaxa language for seven years. I began as a self-taught learner, using print and online resources while living in Vancouver for university. Most recently, I completed the Mentor-Apprentice Program (MAP)⁴ in April 2025, completing 900 hours of immersive language learning with my mentor, Mary Mahseelah. I would describe my proficiency as an advanced beginner, approaching early intermediate. I am continuing my language journey with an additional 300 hours of immersion over the next three years, and I am part of a weekly online community language class. That said, learning Ktunaxa is a lifelong journey. This program provided me with the skills to begin working as a language consultant with the Ktunaxa Nation, supporting the transcription and translation of archival Ktunaxa recordings, as well as contributing to the Ktunaxa FirstVoices⁵ website.

⁴ The Mentor–Apprentice Program offered by the First Peoples’ Cultural Council is modeled after the Master–Apprentice Program developed by Leanne Hinton. The program pairs one highly motivated apprentice with a mentor, typically a fluent speaker of the language, to learn through immersion. Participants spend approximately 10 hours per week in the language, for a total of 300 hours per year, and may continue for up to three years, totaling 900 hours. Sessions focus exclusively on speaking, hearing, and listening to the language; the use of English, as well as reading and writing, is discouraged. Learning takes place through every day and cultural activities such as cooking, shopping, nature walks, and other land- and community-based experiences, with an emphasis on using the Indigenous language in meaningful contexts.

⁵ The Ktunaxa FirstVoices website is an online community language archive and learning resource that provides access to Ktunaxa words, phrases, and audio recordings to support language learning and revitalization. It is hosted on the FirstVoices platform developed by the First Peoples’ Cultural Council to support Indigenous communities in documenting, preserving, and revitalizing their languages (<https://www.firstvoices.com/ktunaxa>).

Beyond my community, I have a passion for advocating for Indigenous languages at both national and international levels. I contribute as a youth member to several key committees, including the Youth Advisory Group for the Canadian Commission for UNESCO (CCUNESCO), the International Decade of Indigenous Languages Working Group led by CCUNESCO, and the UNESCO International Decade of Indigenous Languages Ad-Hoc Group 4: Digital Quality and Domains.

Over the course of the past 25 years, I have come to understand my responsibility. Through a recent conversation with my grandmother, I learned that perhaps this responsibility was not a coincidence after all. She told me that when I was only a few months old, we were at the Band Office in yaqit ?a·knuq̄i?it, where Maḥi· (Mary) Ignatius (Hilly's sister) met me. When she learned that I was both Ktunaxa and Niitsítapi, she told my grandmother that if you catch a blue jay and place it in a baby's mouth, the child will be able to speak any language they choose. I can confirm that my mother did not actually put a blue jay in my mouth, but my grandmother said that perhaps this story was a gift to us. Maybe it was a sign from the ancestors, guiding her to share this with me as a reminder of my responsibility. In a way, she believed I would be able to speak both my languages.

Learning this story affirmed that my love for language began at birth. Through cycles of unlearning, re-learning, and learning again, I have come to understand that when I speak my language, I am not speaking only for myself. I speak for those who can no longer speak, and for those who have not yet been able to speak. By speaking my language, I am the voice for my ancestors, and the voice for the plants, animals, the earth, and spirits. Our Indigenous languages connect us to our ancestors, our family, community, kinship, land, plants, animals, our spirit, and our identity. Therefore, languages are much more than sounds, or utterances to communicate;

they are an entire worldview that is connected to a distinct group's unique perspectives, culture, history, and are connected to the territory for which they are spoken. My goal in life is to support my Ktunaxa community in any way that I can through our language. I want others in my community to know that our language is central to our identity, and through it we can heal. In this work, I hope my ancestors understand me when I speak, and that they hear my voice as an act of care, responsibility, remembering, and continuation. This project is a culmination of my personal experiences, my love for our language, and hope for the next generation.

2.2 Ktunaxa Ꞥ Ksanka ꞤaꞤismaknik Ꞥ ꞤamakꞤis Ktunaxa: The Ktunaxa and Ksanka People and Their Land

This research project focuses on my maternal ancestry: the Ktunaxa language and people. I begin by clarifying terminology. There are two traditional names to describe our people and language: Ktunaxa or Ksanka. Both terms are used to describe both ourselves and our language. For instance, you will hear people say, "I am Ktunaxa and I speak Ktunaxa." Or "I am Ksanka, and I speak Ksanka." Terminology varies by geographic location: Ktunaxa is commonly used in Canadian communities and the Bonner's Ferry band, while Ksanka is primarily used in Elmo, Montana.

Historically and in contemporary records, Ktunaxa has also appeared in anglicized forms such as *Kutenai*, *Kootenai*, or *Kootenay*. Documentation in 1908 by settlers and ethnographers recorded 77 different spellings of 'Kootenai' or Ktunaxa (Manning, 1983), reflecting attempts to approximate the language using English orthography. These anglicized forms appear in ethnographic records, missionary writings, place names, and commercial uses (Manning, 1983; Morgan, 1991). In this thesis, I use Ktunaxa to refer broadly to the people and the language.

When anglicized terms appear, they reflect either historical sources or terminology used by others.

The traditional Ktunaxa territory, known as ʔamakʔis Ktunaxa, spans approximately 70,000 km², extending across what is now Canada in southeastern British Columbia, southwestern Alberta, and into the United States, including western Montana, Idaho, and parts of Washington (see Fig. 3 for a map of the Ktunaxa / Ksanka traditional territory) (Ktunaxa Nation Council, n.d.; Manning, 1983). The Ktunaxa have lived on their lands for approximately 14,000 years (Gahr, 2013). Archaeological evidence and interviews with Elders indicate that the Ktunaxa lived along the foothills of the Rockies through the Ice Ages (Kutenai Language Task Force, 1989).

Prior to settler contact, the Ktunaxa were nomadic, moving across ʔamakʔis Ktunaxa in tune with seasonal cycles and animal migrations (Morigeau, 2020). They lived in harmony with nature, hunting, fishing, gathering berries, and building a deep, lifelong relationship with the land (Kutenai Language Task Force, 1989). These enduring connections to the land predate European “discovery” and the imposition of colonial borders (Kutenai Language Task Force, 1989; Manning, 1983).

Geographically, the Ktunaxa were divided into Upper Kootenai and Lower Kootenai, corresponding to the flow of the Kootenay River: communities along the Upper Kootenay River were Upper Kootenai, while those along the Lower Kootenay River were Lower Kootenai (Kutenai Language Task Force, 1989; Manning, 1983; Morgan, 1991). These two groups were distinguished by the lands they primarily inhabited. Upper Kootenai communities typically lived a more ‘plains’-oriented lifestyle, relying on the land through bison and wild game hunting, gathering berries and medicinal plants, and producing cedar root baskets. Their tipis were

constructed using animal skins. In contrast, Lower Kootenai communities followed a more plateau-based lifestyle, relying on canoe travel and fishing, and constructing dwellings from cedar bark and Indian hemp (Kutenai Language Task Force, 1989; Manning, 1983). These differences were shaped by the resources available in each region, reflecting distinct geographic locations and, consequently, different relationships with the land.

Prior to the establishment of reserve and Crown lands, there were approximately nine Ktunaxa bands: Tobacco Plains, Libby-Jennings, Bonner's Ferry, Fort Steele, Creston-Windermere, Copeland, Joseph's Prairie, and Whiteswan⁶ (Kutenai Language Task Force, 1989; Manning, 1983). Today, the Ktunaxa occupy a significantly reduced land base due to colonial processes such as land dispossession, treaty-making, and the imposition of Crown and state lands (Kislowicz & Luk, 2019).

The modern Ktunaxa and Ksanka Nations consist of six communities. In Canada, four communities form the Ktunaxa Nation Council: **ʔakisq̓nuk** (Columbia Lake), **ʔaq̓am** (St. Mary's), **yaq̓it ʔa·knuq̓h̓it** (Tobacco Plains), and **yaqa·n nuʔkiy** (Lower Kootenay) (Ktunaxa Nation Council, n.d.). In the United States, **k̓upawic̓q̓nuk** (Elmo) is part of the Confederated Salish and Kootenai Tribes in Montana, and **ʔaq̓anq̓mi** (Bonner's Ferry) is part of the Kootenai Tribe of Idaho (see figure 3). These communities include many of the remaining fluent speakers of Ktunaxa and sustain cross-border relationships grounded in shared history and responsibility to the land (Lozar, 2018).

The Ktunaxa people have historically been, and continue to be, a small Nation. Historical estimates suggest that in 1780, the Ktunaxa population numbered approximately 1,200 people (Manning, 1983). Today, the total Ktunaxa population across Canada and the United States is

⁶ I do not use the traditional Ktunaxa names here because the source cited uses English terminology.

estimated to be close to 2,000, with approximately half residing in the four Canadian Ktunaxa Nation communities and the remainder living primarily in Idaho and Montana (Gessner et al., 2022; Ktunaxa Nation Council, n.d.). Despite their comparatively small population size, particularly in relation to neighbouring Indigenous Nations such as the Blackfoot Confederacy, whose population numbers reach into the tens of thousands across Canada and the United States (Britannica, n.d.), the Ktunaxa have remained a resilient, politically distinct, and culturally strong Nation.

Understanding Ktunaxa people, history, and our land is integral to this research. Our people have lived on these lands for thousands of years, maintaining reciprocal and harmonious relationships with the environment. These teachings have been passed down through generations. Settler colonialism, however, has disrupted this way of life, diminishing nomadic practices, land-based traditions, ceremony, song, and language. My research seeks to offer a new understanding of the Ktunaxa language from its place of origin: the land itself.



Figure 3. *Ktunaxa Traditional Territory*⁷ (Shields, 2019, ed. by Aiyana Twigg, 2023)

2.3 Ktunaxa ʔa·klukaqum (Ktunaxa Language)

Among the approximately 7,000 languages spoken worldwide, an estimated 4,000 are Indigenous languages (Eberhard et al., 2024; UNESCO, 2010). The majority of these Indigenous languages have few remaining speakers and face ongoing disruption in intergenerational transmission (Eberhard et al., 2024; UNESCO, 2010). The Ktunaxa language, spoken by the Ktunaxa people, is classified as a linguistic isolate, as it has no demonstrated genetic relationship

⁷ The brown flags on the map indicate the six modern Ktunaxa communities.

to any other known language family (Bochnak & Matthewson, 2015; Dryer, 1991), making it only one of two language isolates in British Columbia, Canada (Gessner et al., 2022). Ktunaxa represents approximately 0.014% of the world's languages, underscoring its rarity and its irreplaceable contribution to global linguistic diversity, history, culture, and ecological knowledge. Because Ktunaxa is a language isolate, revitalization efforts must rely almost entirely on knowledge held within the Nation itself, particularly through Elders, community members, and intergenerational oral transmission, rather than on comparative support from related languages.

While Ktunaxa is not genealogically related to neighbouring language families, scholars have observed certain grammatical similarities with Algonquian languages to the east and shared phonological features with Salish and other Pacific Northwest languages to the west (McClay, 2017). These similarities are understood to reflect long-standing regional contact rather than common ancestry.

Ktunaxa is recognized as having two contemporary dialects that correspond to the Upper and Lower Kootenai groups discussed earlier. Dialectal differences are minimal and consist primarily of minor spelling variations and subtle shifts in pronunciation. For example, the word for *black bear* appears as **nupqu** in Upper Kootenai and **nipqu** in Lower Kootenai, while *nose* is rendered as **ʔa·kʷun** in Upper Kootenai and **ʔa·kʷin** in Lower Kootenai (Twigg, in preparation). Earlier ethnographic sources also suggest the historical existence of a Plains Kootenai dialect, though this variety is no longer spoken today (Morgan, 1991; Teit, 1930).

Understanding the contemporary status of the Ktunaxa language requires examining the historical institutions and colonial policies that directly disrupted its intergenerational transmission. The status of Ktunaxa was deeply impacted by the operation of the St. Eugene

Mission, also known as the Kootenay Indian Residential School (KIRS). The St. Eugene Mission was the site of the Kootenay Indian Residential School and was established by the Oblate Order in 1873. Although a school building was constructed in 1873, it never functioned as a school due to the inability to appoint a principal. The school began operating in 1890 with an initial enrolment of 12 boys and 15 girls. In 1910, the St. Eugene Mission was formally designated as an Indian Residential School, becoming one of the first comprehensive industrial and residential schools in Western Canada. At the time, it was also among the largest buildings in the British Columbia Interior. Located on Ktunaxa territory in ʔaᑭam, just north of Cranbrook, British Columbia, the school operated for approximately 60 years before closing in 1970. During this period, an estimated 5,000 Indigenous children, primarily from the Ktunaxa (Kootenay), Secwepmc (Shuswap), Syilx (Okanagan), and Niitsítapi (Blackfoot) Nations were forced to attend the institution (ᑭamniᑭ Children’s Truth and Reconciliation Society, n.d.).



Figure 4. *Kootenay Indian Residential School by Author*

Due to its small population, its status as a language isolate, and the lasting impacts of colonial assimilationist policies such as the Kootenay Indian Residential School, Ktunaxa is

currently classified as *critically endangered*, meaning that it has very few fluent speakers remaining (Gessner et al., 2022), and is on the brink of “extinction”. The impacts of these colonial institutions are reflected not only in the number of remaining speakers, but also in how Indigenous languages like Ktunaxa are classified and described in contemporary linguistic frameworks. Classification systems used by organizations such as UNESCO often describe Indigenous languages in deficit-based terms such as “moribund” or “on the brink of extinction” (Eberhard et al., 2024; Leonard, 2023; UNESCO, 2010). Indigenous scholars, language revitalization practitioners, and organizations, including the Canadian Commission for UNESCO’s International Decade of Indigenous Languages working group and the First Peoples’ Cultural Council, have challenged this framing. They argue that such terminology positions languages as non-living entities and fails to recognize their ongoing spiritual, cultural, and relational connections to land and community.

In response, more affirming terminology has emerged, including concepts such as sleeping languages, reawakening, reclaimed, revitalized, few remaining speakers, and emergent vitalities (Dunlop et. al, 2018; First Peoples’ Cultural Council, 2023; Leonard, 2023; Perley, 2012; Twigg, 2024). As Twigg (2024) explains, deficit-based language suggests final loss, whereas Indigenous perspectives understand languages as living, originating from the land: “Languages come from the land; therefore, they cannot go away. They might go dormant, but the seeds of the language are embedded in the land” (p. 4).

According to the FPCC (2022) *Status Report on B.C. First Nations Languages*, of the 882 Ktunaxa individuals reported in British Columbia, approximately 18 individuals (2.0% of the population) are fluent speakers, 4.2% are semi-speakers, and nearly half of the population (48.1%) are active language learners (Gessner et al., 2022). Fluent speakers are grandparents and

Elders over the age of 60, while language learners range from children, youth, adults, and Elders (Dunlop et al., 2018). These statistics are mere numbers, and reports only on three of the four Canadian communities and do not include the U.S communities. There is limited research documenting the number of speakers in the U.S communities, however it is generally estimated that approximately 20-25 fluent speakers of the Ktunaxa language remain. The communities of *kupawic̓q̓nuk* and *ʔaḡanq̓mi* support and cultivate additional language learners.

These statistics do not reflect that Ktunaxa is a living language: one that lives within the land, the blood and memory of our ancestors, and in the hearts and spirits strengthened by the efforts of the Ktunaxa and Ksanka people today. What we should focus on is that Ktunaxa language revitalization and reclamation is strong and resilient. The Ktunaxa and Ksanka communities have invested in community language classes, language apprenticeship programs, culture camps, online and print resources, language conferences, dictionaries, storybooks, and the use of social media (Rosenblum, 2021) to support language revitalization.

Crucially, community leaders and Elders emphasize that revitalization must remain grounded in cultural practices, ceremonies, and land-based learning (Andrew, 2023; Morigeau, 2020), ensuring that the language continues to be lived and embodied rather than restricted to classrooms or texts (Chiblow & Meighan, 2022). This project therefore reflects not only the strength and resilience of the Ktunaxa Nation in revitalizing our language but also remembering the roots of our language that were born from the land, and the memory of our ancestors (Rorick, 2019).

3. From Written Whispers to Collecting Sounds: Background Research⁸

As a Ktunaxa language learner, I have firsthand experience with the realities of language endangerment, as well as the strength, hope, and resilience embedded in Ktunaxa language revitalization and reclamation efforts. I also understand the challenges many learners face. Ktunaxa is widely regarded as a difficult language to learn. As a language isolate with a highly polysynthetic structure, intergenerational transmission disrupted, limited scholarly research⁹, constrained funding, and a small number of people working on language initiatives, there are ongoing barriers to developing sustainable, long-term language programs and resources. These experiences shaped my undergraduate research study, *Written Whispers: Ktunaxa Perspectives on the Writing System* (Twigg, in preparation).

At the time of that study, I was living away from home and learning Ktunaxa primarily through print and online materials. Opportunities for virtual and oral learning were limited, and most available resources emphasized reading and writing rather than speaking and listening. My mother shared an unpublished community resource with me: a Ktunaxa writing system manual developed by Lawrence Morgan, a linguist who researched Ktunaxa for many years and developed the modern-day writing system.

The manual contained explanations of the Ktunaxa alphabet, pronunciation, spelling conventions, and example words and phrases that were accompanied with CD recordings. While the manual supported my learning of the alphabet and helped strengthen my reading and writing

⁸ Here I briefly explain my undergraduate study, *Written Whispers: Ktunaxa Perspectives on the Writing System*. I have written the first draft of a manuscript for this study, which I am hoping to submit for publication. If you would like to learn more about that study, keep a lookout for the published article.

⁹ Scholarly research is not always considered necessary or beneficial in Indigenous language revitalization, as languages are often not learned through analytical or hypothetical lenses. In this project, however, I assume that linguistic research can complement community knowledge and support language learning. For Ktunaxa, a language isolate with a small speaker population and limited published linguistic analysis, research on language structure may help inform teaching resources and support both learners and instructors.

skills, I did not have the CD recordings. As a result, much of what I read relied on memory, imagination, and the few audio recordings available through platforms such as FirstVoices. This led to strong reading and writing skills, but weak speaking and listening skills.

As I worked through the manual, I encountered aspects of the writing system that felt inconsistent or difficult to understand, particularly rules related to spelling and pronunciation. This was especially true for the glottal stop (ʔ) and glottalized consonants such as ṅ. I noticed that phrases such as “*I am*” appeared with multiple spellings and pronunciations: hu ṅini, hun ʔini, and hu nʔini. When I raised these questions with fluent speakers and teachers, responses varied: some suggested certain forms were incorrect, while others explained that variation depended on dialect. Conversations with fellow learners revealed that this confusion was widespread. Further exploration of community resources and the dictionary confirmed the presence of multiple spellings for the same word. Rather than attempting to resolve this variation through standardization, a project far beyond the scope of an undergraduate study, I shifted my focus to understanding community perspectives on the writing system itself.

My research examined how Elders, fluent speakers, language teachers, learners, and linguists experienced the writing system, what they perceived as its strengths and challenges, and whether there was interest in a standardized spelling approach. One of the most consistent findings across the eleven interviews was that pronunciation and sound production were identified as the most difficult aspects of learning Ktunaxa. Participants emphasized that there is no unified or consistent way of teaching Ktunaxa sounds, and that learners are often exposed to different rules or explanations depending on the resource or instructor. This lack of coordinated sound-based instruction has contributed to variation in both pronunciation and spelling among learners. Without shared conventions, spelling and pronunciation have become a source of

debate and confusion. As one community member noted, “We are constantly fighting over how to spell just one word. Because of this, we don’t learn anything” (M. Tennessee, p.c., April 22, 2022). These disputes can limit the development of teaching materials and make learning more difficult for both teachers and students.

These findings directly inform the present research. Because intergenerational oral transmission has been severely disrupted, Ktunaxa language learning has increasingly relied on written materials for teaching, including the modern writing system and phonetic transcriptions from earlier ethnographic research. While these resources are valuable, they have also contributed to a widening gap in pronunciation and spoken fluency. Pronunciation remains one of the most debated aspects of the language among fluent speakers, teachers, and learners, with Elders often expressing concern that the language is “changing” due to differences in how younger generations pronounce sounds (Twigg, in preparation). This discourse can unintentionally create shame among learners who feel they do not sound like first-language speakers (Bird, 2020).

Despite this, focused pronunciation instruction is often minimal or absent in Ktunaxa language classes and learning materials, with the assumption that accurate pronunciation will emerge over time. Where pronunciation is addressed, instruction frequently relies on technical linguistic explanations, which can create further confusion or encourage English-influenced pronunciation due to an overreliance on reading. I, too, relied heavily on linguistic explanations to understand Ktunaxa phonology.

However, one of my core commitments as a researcher is to translate academic knowledge into forms that are meaningful, accessible, and grounded in community ways of knowing. This led me to ask: How can my limited training in phonetics and phonology be used

to support others in learning how to pronounce Ktunaxa sounds? Is it possible to bridge the gap between linguistic analysis and lived, relational language learning? In reflecting on these questions, I came to recognize a deeper issue: Ktunaxa sounds are often taught as abstract symbols, separated from the land and from the worldview in which they were born.

One day, while sitting outside, I heard a crow calling and immediately recognized its resemblance to the x sound in Ktunaxa. The Ktunaxa word for crow, xa·xa, closely mirrors the sound of the bird's call. In that moment, I began to wonder whether my ancestors also listened closely to the land, receiving the sounds of the language through deep observation and relationship. It became clear that sound, land, all living things, and language are inseparable. This research grows from that realization, drawing on both my previous study and my ongoing efforts to restore a living, relational connection between Ktunaxa sounds, the land, and the people who carry them.

4. Research Topic & Questions

This research project explores how Ktunaxa sounds can be understood through the Ktunaxa belief of ʔa·kxam̓is q̓api qapsin, land, and place-based teaching. This type of approach offers a culturally grounded pedagogy for teaching and learning Ktunaxa pronunciation. Language, for the Ktunaxa, is not merely spoken, it is embodied, felt, and carried in relationship with land, spirit, and community. Drawing from my identity as a Ktunaxa and Niitsítapi woman, this research centers on a methodological foundation and guiding metaphor of gathering ʔa·kukp̓l̓ul̓at̓ (Juniper) for entering and understanding the stages of research while developing Ktunaxa pronunciation resources, including a guide, articulation videos, and a website linking to audio and videos, grounded in the land of ʔamakʔis Ktunaxa, and ʔa·kxam̓is q̓api qapsin (all living things).

This project is an evolution of my previous undergraduate research. I now turn upstream, toward the first breath and the first sound, to explore how we come to voice through land-based processes. My research questions are: 1) In what ways are Indigenous sound systems misrepresented when separated from their cultural and land-based context? 2) How can Ktunaxa sounds be understood and taught in ways that honour land, ʔa·kxam̓is q̓api qapsin (All living things), ceremony, and spirit?

5. Ksukit hakit wiłkiłin kupxał (To Carry Knowledge Forward):

Knowledge Bundle

I carry deep gratitude for the knowledge and wisdom gifted to me by nupika (spirits) and my ancestors. At the same time, I recognize that learning is ongoing. In academic research, a literature review is often understood as a survey of existing scholarship that situates a study within what has already been written on a given topic (Wilson, 2008). Within Indigenous research methodologies, however, knowledge is understood as relational and cumulative, shaped through relationships with people, land, spirit, and experience (Absolon, 2022; Kovach, 2021; Wilson, 2008). For this reason, I approach the literature review as a *knowledge bundle*.

The concept of a knowledge bundle reflects how I understand knowledge to be gathered and carried. Throughout life, teachings come from many sources: mentors, Elders, teachers, family members, community, lived experience, oral stories, traditional knowledge and practices, and written texts. Each teaching adds to the bundle and carries its own responsibility and value. Rather than evaluating sources through a critical or extractive lens, this approach emphasizes connection, continuity, and accountability. As Wilson (2008) explains, “when a literature review builds upon the work of others rather than critiquing it, it can function as an expression of relational accountability within an Indigenous research paradigm” (p. 44).

This knowledge bundle is offered to you as a way to share what I have learned. It begins with a review of Ktunaxa-specific literature and existing resources related to pronunciation and sound learning, followed by an overview of Ktunaxa sounds. The discussion then expands to define pronunciation from a technical perspective and to provide a historical overview of pronunciation methods and research in English as a second language, offering broader insight into how pronunciation has been understood and what has shaped the field of pronunciation

instruction. Next, scholarship on pronunciation in Indigenous language teaching and learning is examined. The section concludes with a discussion of how our languages were born from the land and how a land-based pedagogy can inform this project. These areas were selected because they directly inform my research focus: the development of land-based Ktunaxa pronunciation resources grounded in a Ktunaxa worldview.

5.1 Ktunaxa Literature, Sounds, and Existing Pronunciation Resources

The Ktunaxa language has been the subject of intermittent linguistic documentation for more than a century. Compared with many neighbouring Indigenous languages, the descriptive record for Ktunaxa is relatively small, and much of it is dispersed across linguistic grammars, analyzed texts, vocabularies, and unpublished theses rather than consolidated pedagogical resources. Early documentation was produced by missionaries, anthropologists, and linguists working within the descriptive frameworks of their time, including Canestrelli (1894), Chamberlain (1890–1920), and Boas (1918–1926). These works provided invaluable records of lexical items and narratives but varied considerably in how Ktunaxa sounds were perceived, transcribed, and analyzed.

Following this, Garvin's (1948) *Kutenai Phonemics I* study examined the role of stress, contours, and consonant clustering in Ktunaxa, emphasizing that phonological organization in the language cannot be adequately understood through isolated words alone. Subsequent work by Morgan (1991) offered a generalized grammatical description, including a detailed account of Ktunaxa phonology and morphology. Later contributions by Mast (1988) and Dryer (1991–2006) expanded the descriptive record, particularly in syntax and discourse. Since 2011, the Ktunaxa Linguistics Lab at the University of British Columbia has supported new research grounded in contemporary linguistic theory, primarily focusing on morphology, syntax, and semantics with

close collaboration with Dr. Violet Birdstone¹⁰ and the Ktunaxa Nation. In parallel, linguist Dorothy Berney's (Suq Suq) long-term collaboration with the Ksanka Culture Committee in *kupawic̓q̓nuk* has resulted in practical outcomes for the community, including dictionary development, transcription and translation of archival recordings, and mentorship initiatives that bridge academic and community knowledge.

The Ktunaxa language has a rich sound system that includes stops, affricates, fricatives, nasals, liquids, and glides. Consonant clusters of two or more segments are common and form an essential part of Ktunaxa word structure (Garvin, 1948; Morgan, 1991). Ktunaxa also makes important distinctions between plain and glottalized consonants and uses the glottal stop frequently (Garvin, 1948).

The Ktunaxa writing system used today was developed in 1970 by linguist Lawrence Morgan in collaboration with Ktunaxa speakers. It is a phonemic system, meaning that each letter represents one distinctive sound rather than all fine-grained phonetic variation. While the dictionary lists 28 letters in the alphabet, one of these is L, which is the same as the English L, but is not part of the original Ktunaxa sound inventory. Instead, it is a borrowed sound that appears mainly in personal names and loanwords, such as *Kulilu* ("butterfly"). For this reason, I usually describe the Ktunaxa alphabet as having 27 letters: 21 consonants and six vowels.

Ktunaxa vowels are distinguished mainly by length. There are three short vowels and three long vowels, with long vowels marked by a raised dot (for example, *a* and *ạ*). Although only six vowel phonemes are represented in the orthography, vowel quality may vary depending on phonological environment, stress, and speaking style. As a phonemic system, the orthography

¹⁰ Dr. Violet Birdstone, a fluent Ktunaxa speaker from *ʔaḡam*, was awarded an honorary Doctorate in Linguistics from the University of British Columbia in recognition of her significant contributions to Ktunaxa language work, including her longstanding collaborations with the UBC linguistics lab and her co-authorship of scholarly publications.

represents meaningful contrasts rather than contextual variation in pronunciation. Ktunaxa consonants also include meaningful contrasts, such as between plain and glottalized sounds (for example, k and k̠), as well as sounds not found in English, including the barred L (ɬ) and the x sound (Montana Indian Language Program, 2016).

In Ktunaxa, stress consistently falls on the second-to-last syllable of a word (Garvin, 1948; Guntly, 2014). Glottal stops (ʔ), however, do not determine stress and may vary in their realization depending on their phonological environment. They are often weakened or deleted in unstressed syllables, though they are typically retained in word-initial position or before a word-final consonant (Kootenai Culture Committee of the Confederated Salish and Kootenai Tribes, 1999). As suffixes are added and words become longer, stress predictably shifts to the new penultimate syllable, while glottal stops may appear, disappear, or become less perceptible. Stress plays an important role in shaping vowel and consonant realization and contributes to the rhythmic flow of connected speech (Garvin, 1948; Guntly, 2014; Morgan, 1991). Rather than being produced as isolated units, Ktunaxa words occur within larger prosodic patterns.

Ktunaxa verb phrases must contain at least two syllables, a requirement that can influence how words are pronounced. There are also two register styles in Ktunaxa speech. The register used in storytelling differs from that used in everyday conversational speech (Morgan, 1991). In storytelling contexts, speakers tend to emphasize initial words or lengthen syllables to help set the scene, whereas such features are typically absent in casual conversation. McClay (2017) further found that pitch at the end of a phrase almost always declines, and that increases in loudness occur primarily when a speaker is correcting a word. Understanding these patterns helps learners hear and speak the language in ways that sound more natural and respectful,

especially when learning pronunciation through stories, songs, ceremony, and conversation rather than through single words alone. The table below shows the Ktunaxa alphabet.

Some letters have specific names or descriptions that are commonly used within the community. Where these community descriptions are used, they are written out in the table. Letters that are typically referred to by their standard English letter name are marked with a dash (–). For example, the Ktunaxa *m* is simply called *m*.

Table 1. *Ktunaxa Letters and Community Description*

Letter	Community Description	Letter	Community Description
ʔ / ʼ	Glottal stop	ṅ	Hard n / glottalized n
a	–	p	–
a·	Long a / a-dot	p̣	Hard p / glottalized p
¢	Cent sign	q	Regular q
¢̣	Hard cent sign	q̣	Hard q / glottalized q
h	–	s	–
i	–	t	–
i·	Long i / i-dot	ṭ	Hard t / glottalized t
k	Regular k	u	–
ḳ	Hard k / glottalized k	u·	Long u / u-dot
ł	Barred L	w	–
m	–	x	–
ṃ	Hard m / glottalized m	y	–
n	–		

Existing print pronunciation resources for Ktunaxa are relatively limited and quite short. Materials such as the quick guide in the *Kootenai dictionary* and a 4-page *Ktunaxa Pronunciation Quick Guide* provide short descriptions of consonants, vowels, vowel length, diphthongs, and double consonants, often using comparisons to English sounds where possible (Kootenai Culture Committee of the Confederated Salish and Kootenai Tribes, 1999). These resources primarily introduce the 28 letters of the alphabet and provide brief descriptions of each sound. For example, the Ktunaxa q is described as: “Q in the Ktunaxa language has no equivalent sound in English (it does not make a ‘qwah’ sound). It is like the English ‘K’, but it is made further in the back of the throat.”

However, such descriptions do not adequately support learners in understanding where and how the sound is produced. By relying on comparisons to English sounds, these explanations offer, at best, an approximation. As a result, learners are often unable to fully practice or internalize the correct articulation of the sound and may default to more English-like pronunciations due to the reliance on English-based comparisons.

Due to the limited availability of pronunciation resources for Ktunaxa, language instructors have often developed their own pedagogical materials to support learners. Introductory Ktunaxa language courses offered through the College of the Rockies (KTUN 101 and 102) provide one example of such approaches. These courses, previously taught by Dr. Christopher Horsethief and Leanna Gravelle, incorporated explicit attention to pronunciation using articulation-based exercises.

Instruction involved repetitive vocal drills, called *voice articulation*, structured around consonant–vowel pairings, including both short and long vowels (e.g., ki, ka, ku, ki·, ka·, ku·), with the aim of developing learners’ auditory discrimination and motor control of unfamiliar

sounds. Visual supports were also employed, including ultrasound videos that illustrated the mouth and tongue movements during sound production.

Similar multimodal strategies have been adopted in online Ktunaxa community language classes taught since 2018 by Dr. Violet Birdstone, Elise McClay, and Terrance Gatchalian. In these classes, ultrasound imaging and video materials developed at the University of British Columbia have been used to support learners' understanding of tongue and mouth positioning.

In addition, instructors have drawn on a pronunciation resource developed by Ktunaxa teachers Mara Nelson and Elder Alfred Joseph, which extends articulation exercises by pairing each consonant–vowel sequence with a lexical example, similar to voice articulation (e.g., *ca* illustrated through *caqahak* 'Fernie'). This approach provides learners with both phonetic practice and contextualized vocabulary. While additional Ktunaxa language classes exist, publicly documented information on how pronunciation is taught across these settings remains limited. These community-developed resources reflect the adaptive strategies employed by Ktunaxa language teachers in response to the relatively small body of linguistic documentation and pedagogical materials available. Although diverse in form, these approaches have been effective in increasing learners' exposure to Ktunaxa sounds and supporting early stages of pronunciation development.

Research by Guntly (2014) (see section 5.3 to learn more about the study) highlights a significant pedagogical challenge: adult Ktunaxa learners who are first-language speakers of English often struggle to perceive and produce contrasts that are socially salient in Ktunaxa, particularly ejective versus non-ejective stops and velar versus uvular places of articulation (k vs. ḳ, q vs. q̣, k vs. q, ḳ vs. q̣). These contrasts are acoustically subtle and are not exaggerated in fluent speech, making them difficult to acquire without targeted perceptual training.

Guntly's work demonstrates that pronunciation difficulties are not merely articulatory but are rooted in perceptual categorization, reinforcing findings from second-language speech research (Flege, 1995). Notably, existing Ktunaxa pronunciation resources rarely address suprasegmental features such as stress, rhythm, and the role of prosodic units, despite their central importance in the Ktunaxa sound system.

The existing literature establishes a strong descriptive foundation for Ktunaxa phonology while also revealing clear gaps in pronunciation-focused pedagogy. Historical documentation provides detailed inventories and analyses of sounds, but relatively little guidance on how these sounds are perceived, learned, and taught in revitalization contexts.

Furthermore, these documents focus on the segmental features of Ktunaxa, with little attention and studies on the suprasegmental features. Community-oriented resources vary by teachers and prioritize accessibility but often underrepresent prosodic structure. By grounding the present study in understanding both linguistic description and revitalization-oriented research, this project aims to bridge these domains and contribute to the development of pronunciation approaches that are linguistically informed, pedagogically effective, and culturally responsive to community needs.

5.2 Defining Pronunciation and a Historical Review of Pronunciation in English as a Second Language

In second language research, pronunciation is typically understood in two complementary ways. First, pronunciation can be examined through the study of phonetics and phonology. Within these fields, pronunciation refers to the articulation of speech sounds (phones and phonemes) and their systematic patterns within a language (Hayes, 2009). This includes both *segmental features*, which are individual consonants and vowels, and *suprasegmental features* such as stress, rhythm,

intonation, and connected speech (Brown, 2014; Celce-Murcia, Brinton, & Goodwin, 2010; Hayes, 2009). From this perspective, pronunciation is concerned with how sounds are physically produced by the speech organs and how they function within a sound system.

In contrast, within the field of Second Language Acquisition (SLA), pronunciation is commonly defined as the ability to produce and perceive speech in a way that is intelligible and appropriate within a given speech community. This understanding includes accurate or acceptable production of sounds, control of stress, rhythm, and intonation, and the ability both to understand spoken language and to be understood by others (Derwing & Munro, 2005; Foote et al., 2016). While these two conceptualizations of pronunciation are closely related, they diverge in instructional practice. Although pronunciation necessarily draws on phonetic and phonological knowledge, such as understanding phones and phonemes and how they are produced in the vocal tract, pronunciation instruction focuses more directly on how these sounds are conveyed through stress, intonation, and tone in ways that promote understanding among speakers.

Despite its importance, pronunciation instruction has historically received limited attention in SLA. Much of the focus has traditionally been placed on teaching grammar to second language (L2) learners (Bird & Miyashita, 2018; Derwing & Munro, 2005; Kang & Staples, 2025; Pedrazzini, 2016). This approach often assumes that accurate pronunciation will naturally develop once learners have established a foundational understanding of grammatical structures (Bird & Kell, 2017). However, this emphasis on grammar has contributed to the widespread neglect of pronunciation instruction (Bird & Kell, 2017; Bird & Miyashita, 2018; Foote et al., 2016), resulting in a lack of research attention and limited instructional focus on pronunciation in SLA and in programs such as English as a Second Language (ESL) (Derwing & Munro, 2005; Kang & Staples, 2025; Pedrazzini, 2016).

One reason for this neglect is that many English language teachers have not received sufficient training in pronunciation or phonetics to provide individualized pronunciation feedback (Derwing & Munro, 2005; Kang & Staples, 2025; Pedrazzini, 2016). As a result, pronunciation is often absent from curricula, and many teachers report feeling inadequately prepared to teach it. Surveys have also noted a lack of pronunciation-focused courses and instructional resources for teachers (Foote et al., 2011).

Over time, pronunciation research has evolved, with scholars largely focusing on three interrelated areas: accentedness, comprehensibility, and intelligibility. *Accentedness* refers to the degree to which a speaker's accent differs from that of the target language; *comprehensibility* refers to listeners' perceptions of how easy or difficult a speaker is to understand, emphasizing perceptual and processing effort; and *intelligibility* refers to listeners' actual understanding of spoken utterances (Derwing & Munro, 2005; Kang & Staples, 2025). As Kang and Staples (2025) note, "pronunciation is important in the assessment of oral skills as it helps us understand the fundamental processes of the construction of spoken discourse in L2 performance" (p. 18). In this sense, pronunciation represents an important milestone in the development of overall language proficiency, alongside grammatical competence.

However, it is widely acknowledged that native-like pronunciation is nearly unattainable for adult L2 learners (Derwing & Munro, 2005; Hinton, 2002). Instead, research emphasizes that improved intelligibility, or how much of a speaker's message a listener can understand, regardless of accent, is the most important outcome of pronunciation instruction in SLA (Derwing & Munro, 2005).

Historical approaches to second language pronunciation teaching further illustrate shifting priorities in the field. Kang and Staples (2025) identify seven primary methodologies,

summarized below in chronological order from the oldest to newest. The *grammar-translation* approach devoted little attention to pronunciation, instead emphasizing analytical study of grammar and translation, often resulting in limited communicative ability. The *direct approach* sought to address this limitation by emphasizing language use rather than analysis and relying heavily on native-speaking instructors, though this model proved impractical in many contexts. The *reading approach* prioritized reading proficiency, reflecting a historical context in which spoken communication was less necessary. *Audiolingualism* emphasized repetition and drills, placing greater importance on pronunciation through imitation. The *cognitive approach* viewed language learning as rule acquisition, shifting attention back to grammar and vocabulary. The *communicative approach* emphasized meaningful interaction while downplaying formal linguistic features, including pronunciation. The *nativeness approach* positioned native-like pronunciation as the instructional goal, whereas the *intelligibility approach* prioritized intelligible and comprehensible speech rather than native-like accuracy.

Two important theoretical shifts accompanied the introduction of these approaches. First, when the communicative approach emerged in the 1980s, its emphasis on meaning led to further marginalization of pronunciation instruction (Kang & Staples, 2025). Shortly thereafter, the intelligibility principle gained prominence, reframing pronunciation goals around understandability rather than nativeness (Kang & Staples, 2025).

Despite growing acceptance of the intelligibility approach, pronunciation remains under-researched and frequently overlooked in SLA. Many instructional materials continue to rely heavily on phonetics and phonology, including instruction in the International Phonetic Alphabet (IPA), phonemic inventories, and place and manner of articulation. Teachers often report using vocal tract diagrams and tactile techniques, such as having learners place their hands on their

throats while producing sounds, to support pronunciation learning (Brown, 2014; Foote et al., 2011).

Functional load represents another important principle in pronunciation teaching. Functional load refers to the extent to which a particular phonemic contrast contributes to distinguishing meaning in a language (Foote et al., 2011). A contrast has a high functional load if confusing it results in frequent misunderstandings, and a low functional load if confusion rarely affects meaning. In English, for example, the contrast between /b/ and /p/ has a high functional load, as confusing these sounds can significantly alter meaning (e.g., *bat* vs. *pat*, *rip* vs. *rib*).

In contrast, sound contrasts such as /t/ and /d/ are often considered to have a relatively lower functional load, as confusion between them typically does not prevent understanding in many communicative contexts (e.g., *tip* vs. *dip*). (Brown, 2014; Foote et al., 2011). Functional load is particularly valuable for instructional decision-making, as it allows teachers to prioritize sound contrasts that most strongly impact intelligibility. This principle is often applied through minimal pair instruction, which teaches two contrasting sounds using word pairs that differ by only one phoneme (e.g., *bat/pat*, *rip/rib*). Hearing contrasts side by side helps learners perceive and produce differences more effectively. However, the success of this approach depends on selecting minimal pairs that are common and meaningful in everyday language use (Foote et al., 2011).

Finally, **corrective feedback** plays an important role in pronunciation instruction, allowing learners to identify and address problem areas immediately after speaking. Despite its value, surveys indicate that many ESL instructors devote less than one hour per week to pronunciation instruction overall, and not all teachers are taught the IPA, phonemic inventories,

and place and manner of articulation, which is why many are hesitant to include pronunciation in their classes (Foote et al., 2011).

Research and approaches to pronunciation in English as a second language have evolved over time. However, pronunciation remains under-researched, and there continues to be a lack of training, resources, and institutional support for teachers. Across the theories discussed, a common theme emerges: pronunciation approaches are often highly technical, and theory driven. This emphasis may stem from the focus on a dominant, colonial language such as English, where pronunciation instruction is frequently detached from connections to land, spirit, and identity. As a result, the approaches, understandings, and theories that shape pronunciation instruction in Second Language Acquisition and English as a Second Language differ significantly from those needed for Indigenous language contexts. Indigenous languages involve additional layers of complexity, as they are living languages rooted in the land and deeply connected to the identities and lived experiences of the people who speak them.

5.3 Pronunciation in Indigenous Language Teaching & Learning

In the fields of Indigenous Language Revitalization (ILR), Indigenous Language Learning (ILL), and Additional Language Learning (ALL), programs have primarily focused on increasing spoken fluency, as ILR is concerned with increasing the number of speakers within a community (Bird & Kell, 2017). This includes approaches such as language nests, immersion programs, and Mentor-Apprentice programs, all of which emphasize exclusive use of the target language (Bird & Kell, 2017). All of these programs discriminate against the use of writing and reading, as Hinton (2002) notes, “Reading harms the pronunciation of a beginning learner because their pronunciation is based on a formula of how letters sound and that formula is usually based on knowledge of English. Reading is helpful if you’re trying to learn how to read a language but can

hinder your learning of how to speak a language” (p. 2). How pronunciation can be meaningfully integrated into these programs remains poorly understood (Bird & Kell, 2017; Bird & Miyashita, 2018; Foote et al., 2016).

In fact, pronunciation instruction for Indigenous languages is both under-researched and under-theorized, particularly given the complex phonological systems many Indigenous languages possess, as well as the ways grammatical structure can influence pronunciation in comparison to English (Bird, 2020; Bird & Kell, 2017; Lukaniec & Palakurthy, 2022). As a result, many Indigenous language learners struggle to replicate the pronunciation of fluent speakers, due to the influence of English phonology and a lack of targeted support in hearing and producing subtle sound contrasts (Bird & Kell, 2017; Bird et al., 2023). This often leads to frustration, embarrassment, and shame, especially when learners recognize the importance of proper pronunciation in reclaiming and revitalizing their language (Bird & Kell, 2017; Bird et al., 2023; Bliss et al., 2018; Guntly, 2014). One Ktunaxa learner noted, “they all sound like k’s to me” (Guntly, 2014, p. 285), underscoring the challenge in trying to distinguish between the regular k, the q, hard k (k̰) and hard q (q̰).

While subtle sound differences carry semantic meaning in all languages, pronunciation takes on particular significance in Indigenous languages, where ongoing language endangerment means that pronunciation is often tied to identity, emotion, and relationships to fluent speakers and Elders. In Blackfoot, for example, pitch on vowels can change word meaning (Fish & Miyashita, 2017), while in Ktunaxa, every stop consonant has an ejective counterpart, such as [k] and [k’], or [q] and [q’], that learners must distinguish and produce accurately to convey the intended meaning (Guntly, 2014). For example, minimal pairs such as **ʔa·kał** (‘sack’) vs. **ʔa·qał** (‘cloud’) vs. **ʔa·q̰ał** (‘glove’) illustrate how omitting a glottalization or confusing the distinction

between [k] [q] and [q'] can completely change a word's meaning (Guntly, 2014; Montana Indian Language Program, 2016).

Additional language learners of Indigenous languages must not only practice pronunciation to convey accurate meaning, but they also navigate the pressure to “perfect” their pronunciation as a way of honoring their Elders and ancestors (Bird, 2020; Bird & Kell, 2017; Hinton, 2002). This can sometimes lead to an overemphasis of sound production. Bird (2020) found that the younger generation of SENĆOŦEN speakers tended to overarticulate the ejective t, /tʰ/, which linguists have described as a weak ejective. This hyperarticulation is moving the sound toward a stronger ejective. These findings suggest that younger speakers are deliberately emphasizing this sound to assert their SENĆOŦEN identity and to maintain a clear distinction from English.

This relationship between pronunciation and identity is not unique to Indigenous language contexts; research shows that many L2 speakers of English intentionally resist modifying their accents in order to maintain a sense of identity (Foote et al., 2011; Teló et al., 2026). However, in Indigenous language revitalization contexts, this relationship carries additional cultural, relational, and intergenerational significance.

Bird and Miyashita (2018) emphasize that phonetic instruction in Indigenous language education remains under-researched and under-resourced. This lack of support contributes to its absence in many curricula. Yet accurate and meaningful sound production is a vital component of language learning and revitalization, particularly for languages with complex or unfamiliar phonological systems compared to English. Techniques, methods, and practices for pronunciation instruction differ significantly between Second Language Acquisition, Additional Language Learning, and Indigenous Language Learning. These fields address distinct languages

and challenges and are shaped by different historical contexts and experiences, including the legacy of emotional and cultural trauma.

Several efforts have been made to develop phonetic resources for teaching the sounds of Indigenous languages. Approaches have included using linguistics, technology, software, video games, art, melody, and minimal pair instruction. For example, Bliss et al. (2018) used ultrasound imaging to capture the tongue movements of fluent speakers, allowing learners to visualize place and manner of articulation. This approach helps learners replicate tongue placement and engage muscles they may not have been aware were involved in producing specific sounds in the language.

Fish and Miyashita (2017) present a unique approach to teaching Blackfoot pronunciation by developing visual pitch art to represent Blackfoot melodies. Since pitch in Blackfoot is semantically significant, and word meanings can change based on pitch, this aspect of pronunciation is crucial, yet often overlooked. Pitch accents are typically not marked in writing, leading many teachers to assume learners don't notice or need instruction on pitch. To address this, the authors used *Praat* software, and Excel spreadsheets to develop graphs of pitch contours, creating visually appealing representations that make these subtle variations more accessible and teachable for language learners. The results were positive and supported both teachers and learners in understanding pitch and melody in Blackfoot.

However, a key limitation was that this approach was not easily accessible for teachers and learners to develop their own materials. It relied on multiple tools and required specialized knowledge of linguistics, pitch, and tone, as well as an understanding of how to elicit and analyze this information using software such as *Praat*. Since then, the authors have developed a software called MeTILDA. This tool allows teachers and learners to upload audio recordings of

Blackfoot words, which are then transformed into automated pitch-art illustrations. This process eliminates the need for Praat, Excel, and other tools, and does not require advanced technical knowledge (Chen et al., 2024; Miyashita et al., 2024).

Guntly (2014) conducted a phonetic training study to support adult Ktunaxa learners in perceiving ejective consonants such as [k], [kʰ], [q], and [qʰ], which are absent in English and difficult for learners to distinguish. The study employed high-variability phonetic training and introduced tools such as *Praat* to visualize waveforms, helping learners identify sound differences they might not otherwise hear or produce accurately. In addition, Guntly used minimal pair methodology to examine whether participants could identify, differentiate, produce, and perceive the contrasts among the four sounds. Participants listened to multiple audio recordings of words that were phonetically similar but differed in their use of ejectives and were asked to select which word they heard. After several training sessions, results showed improvement between the pre- and post-tests. Although the findings were inconclusive due to the small sample size and short timeframe, the study highlighted important gaps in sound perception and provided a foundation for future research in culturally relevant pronunciation instruction.

Beyond specialized software, digital games have also been used to support Cree second language learners in developing phonological awareness. SoundHunters, developed by Lothian et al. (2020), is an interactive game in which learners match heard sounds to written forms by selecting the correct option from visually presented deer characters. The game includes four progressively complex tasks: identifying sound-symbol correspondences at the single-character level, recognizing mappings in character pairs, distinguishing minimal pairs, and identifying full words. Each task is offered at varying levels of difficulty, supporting incremental development of phonological awareness and listening comprehension. The authors found that the game

increased learners' phonological awareness while reducing anxiety around pronunciation. Users also reported enjoying the experience, as it felt more like gameplay than study.

While current approaches have supported the development of phonological awareness in Indigenous languages, they often rely on Euro-American theoretical and analytical frameworks and lack a cultural lens in pronunciation instruction (Finstad, 2022). Such approaches also require access to specialized technology and software, as well as training in linguistics, which may not be readily available in many learning contexts. As a result, learners may not have the necessary knowledge or resources to use these tools independently. What is missing are culturally relevant approaches to teaching and learning pronunciation in Indigenous languages.

To date, only one documented land-based approach to teaching Indigenous pronunciation exists. Finstad (2022) developed a series of eight videos that pair hul'q'umi'num' consonant sounds with natural sounds from Snaw'naw'as territory. Examples include the use of caves, water, and plants to illustrate how hul'q'umi'num' consonants are articulated. By grounding pronunciation in the environment, this approach offers learners a culturally meaningful, place-based way to connect with the sounds of the language. Finstad (2022) found that this method supported learners' memory, strengthened connections to the sounds, and fostered relationships with the language more effectively than technical instruction alone.

5.4 Ka·klukaqwała qakikaxuʔmik nas ʔamaks: Our Language was Born from the Land: Environmental Totality

“It can be observed that Niitsipowahssin, the Blackfoot language, and its evolution, is based on the original sounds of the totality of the biosphere within Blackfoot territory, not only on the singularity and combination of those sounds but these

sounds in a state of flux. Consequently, the importance of the soundscape of the land”
(Niitsitapi Pod, 2026, p. 181)

Much of my research project argues that our languages are deeply connected to, shaped by, and inseparable from the lands and territories on which they are spoken. I extend this argument by suggesting that our languages are born directly from the land. In this sense, language emerges from the sounds, beings, and relationships of place, creating a distinct linguistic soundscape that can only be fully understood through the worldview of that land.

Many of the approaches discussed above share a tendency to analyze language through a technical and dissected lens, treating sounds as non-living, neutral units. For example, Hayes (2009) writes, “The sounds of a language are intrinsically meaningless: their only purpose is to form the building blocks of which words are made... One could put it this way: the only real purpose of a speech sound is to sound different from the other sounds of the language, this is what makes a spoken vocabulary possible” (p. 20). While this perspective may be useful within theoretical linguistics, it can be harmful in language teaching contexts, as it implicitly suggests that the sounds themselves do not carry meaning. For Indigenous languages, this understanding is incomplete. Our languages, and their sounds, are born from the land and remain deeply connected to spirit, identity, culture, experience, and place.

The sounds of our language reflect the environment, the living beings that surround us, and the relationships we hold with them. As Fredriksson (2026) explains, “The way in which the human body is resonating with the sonic landscape of the environment annotates the relationality that precedes our intentional relations with the natural world. In auditory perception, sounds enter our body and resonate within it” (p. 9). This perspective emphasizes that sound is not merely heard but embodied, reinforcing the relational nature of language.

To further describe this phenomenon, I draw on the concept of “Environmental Totality,” articulated by Dr. Leroy Little Bear, a Niitsitapi scholar from Kainai (Blood Reserve), whose keynote I attended at the A’tsimaani Blackfoot Language Conference in March 2026.

Environmental Totality refers to the idea that culture emerges from a society’s relationship with its territory and the broader biosphere, encompassing shared values, customs, and underlying paradigms that shape perception and behavior. These culturally grounded frameworks inform how people interpret sensory experience. Language, as an integral part of culture, evolves within this context and is shaped by the surrounding soundscape, including environmental and ecological sounds in constant interaction (Niitsitapi Pod, 2026).

The Ktunaxa people have lived in ʔamakʔis Ktunaxa for over 14,000 years, continuously observing and adapting to the environment. As a result, the language has evolved alongside this environment, with its sounds reflecting the surrounding landscape and its beings. For instance, the voiceless uvular fricative [x] may evoke the call of a crow, while the ejective alveolar affricate [tsʰ] (ǂ) can resemble the chirp of a chipmunk. These connections, however, are not merely descriptive; they are relational and experiential, grounded in long-standing relationships with place. As Fredriksson (2026) further notes, “Due to our embodied nature the environment affects us and works as an agent that moves us in different ways... our behaviour is predicated by how the world conditions our sense-making” (p. 9). In this way, Ktunaxa language must be understood through Ktunaxa ways of knowing and being in that place.

This relationship between language and environment is also reflected in linguistic research. Everett (2013) found a strong correlation between high elevation and the use of ejectives¹¹. Languages with ejectives were typically located much closer to regions above 1500

¹¹ Ejectives in Ktunaxa are ǂ, ḳ, ṃ, ṇ, p̣, q̣, ṭ.

meters, while those without were, on average, over 1900 km away. Ejectives are non-pulmonic sounds produced by compressing air in the pharyngeal cavity without lung airflow, making them easier to articulate at high altitudes where atmospheric pressure is lower. Everett also links ejective use to exhaled breath condensation (EBC), suggesting that these sounds help reduce moisture loss, an adaptive advantage in dry, elevated environments. In simple terms, Everett suggests that languages spoken at higher altitudes, such as in mountainous regions, tend to use ejectives more frequently in their sound inventories than languages spoken at lower altitudes. This is particularly relevant for Ktunaxa, which is spoken in the Rocky Mountains and includes many ejectives, compared to the neighbouring language Blackfoot, spoken in the Plains region, which does not use ejectives. His findings reinforce the idea that our languages are shaped by, and remain deeply connected to, the land and environment.

Because of this, the sounds of our language must be understood from a relational perspective. When learners are invited to approach Ktunaxa sounds as living, meaningful, and rooted in the land, they are able to engage with the language in ways that are culturally and spiritually relevant. However, as English has become the dominant language, many of these relationships and ways of understanding have been diminished. English does not carry the same conceptual frameworks or worldviews needed to fully understand *ʔamakʔis* Ktunaxa, and as a result, important connections to meaning, place, and relationality are being forgotten. Repairing this disconnection requires returning language to its original contexts and relationships: “to bring words back from their metaphysical to their everyday use” (Fredrikson, 2026, p. 8).

5.5 Land-Based Pedagogy: Yaqał hankatitilki na ʔamak - Our People Care for the Land, the Land Cares for Our People

“Our languages are the voices of each of our lands. The lands of which they were born. They tell those stories. They keep our connection to our ancestors. They keep our connection to the ecology, to everything and everyone that grows on that land. And we need to be able to know that our languages serve as their memory.” (Dr. Lorna Wanosts’a7 Williams, Lil’wat First Nation) (Endangered Languages Project, 2022)

One of the strongest relationships that we hold as Indigenous People is our connection to the land. The land is our first teacher, and our languages are born from it (Engman & Hermes, 2021; Hermes et al., 2021; Rorick, 2019). As I began exploring this research project and learning how our language was born from the land, it became clear that the land must serve as pedagogy. To begin repairing these relational connections, we must bring the language back to the land. In doing so, I was reminded of my own relationship to place. As a Ktunaxa person, our language holds deep knowledge of our territories: Knowledge about plants, animals, and placenames across ʔamakʔis Ktunaxa (Andrew, 2023). These names are how we come to understand the land and how we continue to live in relationship with it (Absolon, 2022; Finstad, 2022; Wilson, 2008).

At the same time, I must acknowledge that I, too, have forgotten and, at times, taken this relationship for granted, particularly the names and knowledge connected to ʔa·kxam̓is ǰapi qapsin. As Kimmerer (2017) reflects, “We have lost an entire vocabulary of speech, of experience, and of relationship. Our fundamental currency of relationship, our highly evolved capacity for paying attention to those species that sustain us, has been subverted in an intellectual hijacking. How can we care for them if we do not even know their names?” Reflecting on this, I

was reminded of how deeply our language is tied to the land. For example, all of our words for the months are connected to the land. Our word for July is kuku s̓qumu, which means “Saskatoon berries ripening.” Our word for November is k̓taṭuʔk ʕupqa, which roughly translates to “the sound or call of the deer,” reflecting the sounds deer make during mating season. These translations reflect the relationship we have long maintained with the land and environment, formed through careful observation, attentiveness, and reflection.

Hermes et al. (2021) reimagine education in ways that honor Indigenous epistemologies that center storytelling, relational learning, and multimodal meaning-making. They emphasize that language, land, and learning are inseparable. Rather than focusing solely on formal instruction in Ojibwe, the authors highlight that learning happens through relationship: with place, with Elders, and through non-linear, multisensory experiences that include speech, movement, art, and the land itself. In this way, the forest becomes a co-teacher, offering lessons through presence, silence, and interaction.

Similarly, Ktunaxa knowledge systems have always been passed down through the land, through our creation story, Ktunaxa Law, our Stewardship Philosophy, and Stewardship Principles (Andrew, 2023; Ktunaxa Nation, n.d; Morigeau, 2020). According to our creation story, “the Ktunaxa people were created in our territory, where we will remain as keepers of the land. It also speaks to our obligation to care for and respect the land and all things on it, both living and non-living. These teachings are embodied in Ktunaxa law” (Ktunaxa Nation, n.d., p. 2).

Since time immemorial, the Ktunaxa people have maintained a reciprocal relationship with their land (Andrew, 2023; Morigeau, 2020). Stewardship, taking only what we need while practicing gratitude and respect, sustains balance, harmony, and the survival of both human and

non-human life (Morigeau, 2020). As Indigenous peoples, we hold a sacred responsibility to care for the land and to honour its teachings (R. Gravelle, personal communication, September 15, 2015). This belief in interconnectedness continues to guide Ktunaxa ways of being.

A land-based pedagogy honours our traditional way of knowledge transfer of learning on the land. The transfer of traditional knowledge among the Ktunaxa people has primarily occurred through place-based learning, where the land is our teacher (Morigeau, 2020). This method of knowledge sharing involves learning through direct experience on the land, by seeing, doing, and engaging with activities that are deeply tied to the environment (Engman & Hermes 2021; Hermes et al., 2021; Morigeau, 2020). It is essential that the knowledge of the land be taught alongside the language, so that when one speaks the language, they can feel a profound connection to the land itself (Chiblow & Meighan, 2022; R. Gravelle, personal communication, November 23, 2020). In this way, being on the land not only grounds one's understanding of place, animals, plants, and all living things, but also immerses learners in the language and strengthens their connection to the land.

Furthermore, while utilizing a land-based approach, it will also foster a safe space for learners in an environment they are familiar with.

“When we are talking inside, it's just us talking. When you're talking outside, you're breathing language into the land and into the sea and into the air and into the birds and into the fish and into the trees and you're awakening that with all that spirit. You're speaking life into all our ancient spirits out there and they're sitting around listening” (Sivak et al., 2019, p. 7).

Being on the land, and one with the land is a type of healing invoking a “stress release” (McIvor, 2013). By participating in land-based learning and activities, it supports the overall health and

wellbeing of Indigenous people. Johnson et. al (2024) explains that Indigenous peoples' connection to the land is inseparable, and that our wellbeing is dependent on the wellbeing of our natural environment. If the land is suffering, so too are our languages. If our languages are suffering, so too is the land.

5.6 Summary and Research Gaps

These examples highlight how pronunciation has often been overlooked in Second Language Acquisition, Additional Language Learning, and Indigenous language teaching and learning. As a result, many L2 speakers struggle to hear and produce native-like pronunciation, leading to feelings of shame, embarrassment, and disconnection from their language and identity. Despite some efforts to address phonetics and pronunciation in Indigenous languages, these approaches often lack a cultural grounding that resonates with communities. As chuutsqa (2019) reminds us, “Key to the resurgence of ancestral Indigenous knowledge systems, through decolonizing educational approaches, is recovering and re-strengthening connections to our languages, our relationships with our ancestral homelands, and our spirituality” (p. 225).

Finstad (2022) responds to this gap by introducing a land-based method for teaching hul'q'umi'num' sounds, offering a culturally meaningful alternative to conventional phonetic instruction. Because our languages come from the land, and Ktunaxa knowledge has traditionally been passed down through land and place-based learning, any work on pronunciation must also be rooted in a land-based and culturally meaningful framework. Our language is not separate from the land, it *is* the land. Revitalizing Ktunaxa means restoring relationships with the places, animals, plants, and spirits that shape our worldview. Our grammar, metaphors, and ways of speaking are born from the land that raised us. To carry our language into the future, we must

return to these land-based ways and move forward together in grounded, reciprocal, and sustainable relationships.

6. **Kitqawxantil ʔa·kukpłutał (Gathering Juniper) Methodology**

When I began thinking about my research project, I had to reflect on how I come to know things and my relationship with land, language, culture, and ancestors (Morigeau, 2020). This reflection reminded me of times when I would gather and harvest ʔa·kukpłutał (Juniper). While I cannot share much about our beliefs and uses for this plant, what I can share is that ʔa·kukpłutał is a powerful medicinal plant for our people. I came to realize that the way I seek, prepare, and situate myself to gather, collect, harvest, and bundle ʔa·kukpłutał closely mirrors how I seek, research, gather, collect, analyze, and share knowledge. I decided to practice this methodology in the course IED 510: *Indigenous Leadership*, where I was encouraged to approach research with intention, relational accountability, and care. Entering this work “in a good way” became foundational to my master’s research, as the process itself reflects Ktunaxa teachings about knowledge, land, relationships, relational accountability, and responsibility.

Over four weeks, I gathered and harvested ʔa·kukpłutał within ʔamakʔis Ktunaxa, documenting the process through journaling, prayer, and reflection. Through this practice, I came to understand that the stages of seeking, preparation, gathering, harvesting, drying, and bundling closely mirror the stages of research. Following both Wilson (2008), and Absolon’s (2022) Petal Flower framework, metaphor here functions as a way of defining Indigenous research in forms that remain accessible and meaningful to community. Therefore, this research is guided by a Ktunaxa land-based practice of gathering and harvesting ʔa·kukpłutał (Juniper).

My research asks how observing, listening to, and sitting with the land can guide the teaching and learning of Ktunaxa sounds. As Ktunaxa people, our teachings, laws, and stewardship principles emphasize reciprocal relationships with the land, grounded in the belief of ʔa·kxamis ʔapi qapsin, that all living beings carry spirit (Andrew, 2023; Morigeau, 2020). This

worldview frames the land not as a backdrop, but as a teacher, knowledge holder, and relation (Chiblow & Meighan, 2022; Engman & Hermes, 2021; Hermes et al., 2021; Rorick, 2019). The practice of gathering ʔa·kukpłuʔa became both a metaphor and a method for this research.

This methodology, which I name **Kʔtiqawxantil ʔa·kukpłuʔa** (Gathering Juniper), is grounded in Indigenous research paradigms that understand research as ceremonial, relational, and spirit-led (Absolon, 2022; Kovach, 2021; Wilson, 2008). Knowledge is generated not only through analysis, but through lived experience, emotion, memory, prayer, and relationship with place. Rather than separating research from everyday life, this approach affirms that learning emerges through ongoing engagement with land and spirit.

This methodological framework directly mirrors my research project, which involved collecting and learning Ktunaxa sounds on the land within ʔamakʔis Ktunaxa. In response to the practice of gathering and harvesting ʔa·kukpłuʔa, I envisioned myself carrying a basket. I would visit and sit in different areas throughout ʔamakʔis Ktunaxa. During these visits, I would offer the land yaqit (tobacco), speak to the land, and give thanks for that moment. I would then collect the sounds that I heard. As I observed and listened, my basket would fill with these sounds. I was not simply collecting sounds and placing them into my basket; I was learning about those sounds and my relationship to them. Just as ʔa·kukpłuʔa is gathered with care, intention, and consent, Ktunaxa sounds were approached as living entities rooted in place, story, and relationship, rather than as abstract linguistic units. Harvesting the sounds was a process grounded in care, intention, and relational accountability.

I reflected on what I heard, felt, and embodied during this process. Afterwards, I bundled the sounds together, much like I would bundle ʔa·kukpłuʔa. In my mind, I imagined eating the sounds so that they could be fully internalized and become part of my body. After bundling the

sounds with care, I offered them back to our people. In this way, how I come to understand and present myself is rooted in my deep understanding of land-based practices, such as gathering and harvesting ʔa·kukpʔutʔa. I used this same method to approach my research. Listening to the land, observing animals, water, and plants, and reflecting on sensory experience guided how sounds were understood, practiced, and taught.

As a Ktunaxa and Niitsitapi researcher, I situate myself within this research as both learner and participant. My work is shaped by relational accountability to my ancestors, language, land, community, and future generations. This methodology reflects not only how I conducted this research, but how I understand learning, and responsibility within Ktunaxa ways of knowing.



Figure 5. *Kitqawxantiʔ ʔa·kukpʔutʔa: A Ktunaxa Research Methodology by Author*

7. Collecting Sounds in ʔamakʔis Ktunaxa: Methods

Guided by the methodology of Ƙitqawxantił ʔa·kukpłulał (Gathering Juniper), my methods emerged from Ktunaxa ways of knowing grounded in land- and place-based learning (Andrew, 2023; Morigeau, 2020). Just as gathering ʔa·kukpłulał requires preparation, intention, and respect, this research involved careful preparation, and intentional time on the land through listening, observation, and embodied presence. These land-based practices were carried out alongside a review of relevant literature to support the development of a land-based Ktunaxa pronunciation guide. Preparing to gather involved orienting myself relationally to the land and to the work. This included reflecting on how my body moved through space, how my breath and voice responded to different environments, and which sounds felt natural or effortful to produce. I listened closely to environmental sounds, animals, water, wind, and movement, and considered how these sounds might relate to specific Ktunaxa phonemes. Ktunaxa place names, animal names, and cultural practices informed the metaphors that began to take shape. Through this preparatory stage, knowledge emerged as relational, grounded, and shaped by lived experience rather than abstract analysis.

Following time spent on the land, I began shaping metaphors for Ktunaxa sounds based on what I observed, heard, felt, and embodied. These metaphors form the foundation of the land-based pronunciation guide. Particular attention was given to a group of Ktunaxa sounds that are widely understood to be challenging for learners: ʔ, ɕ, ɕ̣, k, ḳ, t, m, n, p, q, q̣, ṭ, and x. These sounds are either absent from English or involve subtle contrasts that learners often find difficult to perceive and produce. To support articulation and understanding, videos were created and filmed on location, strengthening the relationship between land, sound, and learning.

Throughout this process, existing literature was consulted to support technical phonetic descriptions and to ensure the work remained grounded in respectful and relational engagement with Ktunaxa language and land. Rather than following a linear process of data extraction, the methods emphasized listening, observation, embodied practice, and relational verification. Together, these approaches supported both the conceptualization of Ktunaxa sounds and the development of pedagogical materials rooted in place and lived experience.

7.1 Siłnukni ʔa·kukpłutał: Seeking Juniper (Sound Selection)

When I gather ʔa·kukpłutał, I consider whether the conditions are right and reflect on the state of my heart, spirit, mind, and body. I also think about where I will go to seek ʔa·kukpłutał. In the same way, preparing to gather ʔa·kukpłutał guided how I approached this research, as the scope of the project required careful thought and intentional selection of sounds for deeper focus. I began by reviewing existing literature on Ktunaxa phonology and pronunciation, alongside community-based descriptions.

Drawing on this review and my experience as a Ktunaxa language learner, I identified sounds that are widely understood to be particularly challenging for learners, especially those not present in English or those involving subtle articulatory contrasts. Thirteen sounds were prioritized for focused attention: ʔ, ç, ç̣, k, ḳ, t, m, ṇ, p, q, q̣, ṭ, and x. While all Ktunaxa sounds were ultimately included in the broader pronunciation guide, I chose to give particular attention to these sounds by creating additional 1–2-minute video supports so that learners could see, hear, and build a deeper connection to the sounds.

Prior to this, I created a table bringing together the Ktunaxa letter, its linguistic description using the International Phonetic Alphabet (IPA), and community-based descriptions of each sound. Developing this table and learning where and how each sound is produced in the mouth

helped build a strong foundation for knowing what to listen for and observe during later stages of the research.

7.2 *Kakini ʔa·kiçkʔaʔk*: Selecting Branches (Metaphor Development and Sound Testing)

After establishing a phonological foundation, I turned to how the sounds could be meaningfully brought onto the land. Just as only certain branches of *ʔa·kukʔlutaʔ* are gathered, I began developing preliminary metaphors for each sound before returning to the land for deeper listening and observation. Here, I use metaphor as a pedagogical and interpretive tool to describe the complex, embodied nature of sounds by relating them to culturally and environmentally grounded experiences. Rather than simplifying the sounds, these metaphors situate them within relationships to land, beings, and lived experience. For example, the sound *x* may be understood through its resonance with the call of a crow, inviting learners to engage with the sound through relational listening rather than abstract description.

Similar to the previous stage, I created another table that includes the sound, two example words showing the sound in different positions within a word, an example phrase, a metaphor, a proposed video idea, the place where the video would be filmed, and when. An example for the sound *x* is shown below. Only the thirteen sounds followed this format, whereas the rest of the sounds included only word and phrase examples, and a metaphor.

Table 2. Example of Sound, Words & Phrases, Land-Based Metaphor, Video Concept, Location, and Timing

<i>x</i> (voiceless uvular fricative)	<i>xa·xa·</i> (crow) <i>Sxayuk</i> (wild onion)	<i>ʔinmisani</i> <i>kamkuçukuʔ</i> <i>xa·xa·</i> (six black crows)	Crow cawing; guttural, airy.	Scene: By a tree where a crow is perched. Action: Walking in the forest, you hear a crow cawing and stop to listen. Audio: The sound <i>x</i> comes from our relatives,	<i>Xa·xa·</i> <i>ʔa·knuxuʔnuk</i> (Haha Creek above Wardner) -To be filmed in September
--	---	---	---------------------------------------	--	---

				<p>the crows, who gave us the word <i>xa·xa·</i>. Their voice lives in the back of the throat: deep, airy, and resonating through the land.</p> <p>Practice cue: Crouch slightly and spread your arms like wings. As you breathe out, let the sound <i>x</i> flow steadily from the back of your throat: <i>x... x... x...</i> As you speak, imagine the crow's call traveling through the trees: alive, raw, full of message. Feel the vibration at the uvula, in your throat and chest, as though the land is speaking through you.</p>	
--	--	--	--	---	--

This stage ensured methodological coherence and helped guide the embodied work that followed. Metaphor development functioned as both a pedagogical and methodological tool. Initial metaphors were informed by personal knowledge and experience, drawing connections between sound production and animals, activities, and environmental movements I have observed through plant and medicine gathering, as well as cultural activities shared with my grandma. These metaphors were not treated as fixed. Instead, they were understood as tentative and relational, requiring testing, refinement, and responsiveness. This was an ongoing method throughout my research as weather conditions and time played a factor in when I could visit with the land.

7.3 Kítqawxantił ʔa·kukplułal: Gathering Juniper (Land-Based Listening and Embodied Observation)

After I developed preliminary metaphors, a central method involved spending intentional time on the land within ʔamakʔis Ktunaxa, with particular focus on the area of yaqit ʔa·knuqhiʔit

(Tobacco Plains). While I originally intended to visit multiple communities and significant place names across ʔamakʔis Ktunaxa, the timeframe of this project required a more focused approach. For these reasons, all the videos and time spent on the land were filmed in yaqit ʔa·knuqhiʔit. This felt appropriate, as it is my home, where I grew up, where I first learned my knowledge, and where I also experienced a period of losing my identity and ways of knowing. At the same time, it is a place of great resilience and where I have since reclaimed my identity and language. Visting the land and filming the videos here felt right; it stands as a testament to my strength, and I felt my ancestors were present, watching and gleaming with pride.

Furthermore, I wanted the different seasons to be reflected in the videos, honoring that we are a nomadic and seasonal people who have long followed and migrated with the cycles of the land. Time on the land was approached as an active listening practice. Rather than visiting sites to collect predetermined data, I attended to seasonal conditions, animal presence, environmental sounds, and bodily responses. I reflected on questions such as: What sounds are most prominent here? How does my body respond to these sounds? What movements or activities mirror the effort required to produce specific Ktunaxa sounds?

During these visits, I tested the metaphors I had developed and assessed whether they supported accurate articulation. If the metaphor aligned, I recorded the videos on site. If a metaphor did not align with accepted Ktunaxa pronunciation, it was revised or replaced. This cyclical process emphasized learning through practice, responsiveness, and relationship, rather than adherence to a fixed framework.

7.4 ʔitmuḱuʔni ʔa·kukpʉłʉł: Harvesting Juniper (Relational Verification and Audio Recording)

As the metaphors and understandings of each sound took shape, I selected word and phrase examples to support both linguistic accuracy and relational accountability. Initially, I included only two-word examples in the videos. However, as I reflected on this choice and as the project developed, I decided to include three-word examples in the written pronunciation guide. This change reflects the early stage at which the videos were filmed. As a result, the videos contain two-word examples, while the guide provides three. All examples were reviewed with my mentor, Mary Mahseelah, with careful attention to appropriate usage and sound placement in initial, medial, and final positions.

During this process, we identified a few instances where translations or spellings were inaccurate (see section 8.3 for examples). Where existing audio recordings were unavailable, new recordings were created with Mary and added to the FirstVoices Ktunaxa platform. This stage reflects the harvesting of knowledge. Just as ʔa·kukpʉłʉł is carefully harvested, I had to work carefully with my mentor to ensure the sounds gathered through this process were accurate.

8. K̓ti·kxawičikimik (Bundling the Sounds): The Project Offering

“Any knowledge that is given to us is not meant for us to hide somewhere, it’s not meant for us to just put into our medicine bundle and keep it just for ourselves...whatever you get as medicine to help you is always there to help everyone else too”

(Morigeau, 2020, p. 94)

The final stage of my research is bundling and sharing the sounds, much like how I bundle ʔa·kukp̓łut̓ał. It is the result of the hard work that went into preparation, seeking, listening, observing, gathering, and harvesting. The offering of this research is a set of interconnected, land-based pronunciation resources designed to support Ktunaxa language learners and teachers. These include (1) a 32-page pronunciation guide, (2) a series of articulation videos for thirteen selected sounds, and (3) a companion website that integrates audio and video access (see Appendix A).

8.1 A Basket of Sounds: Articulation Videos and Metaphors

The first bundle offering are the thirteen one- to two-minute articulation videos and sound metaphors created to accompany the most challenging sounds. These videos were filmed on the land in Yačit ʔa·knuč̓iʔit, during the summer, fall, and winter. Some areas included the lake, forest, and a plains-like field. Each video begins with a consistent structure to support learner familiarity by showing the sound written on a piece of paper, which is then placed on the land corresponding to its land-based metaphor. The video then depicts me walking with a basket, listening for the sound, and placing it in the basket, symbolizing the process of collecting the sound. A voice-over accompanies this imagery, providing a teaching about the sound. The video continues with narration of the metaphor, often visually demonstrating the metaphor in relation to the sound. Next, the video presents articulation practice: the sound is modeled, with

intentional pauses to allow learners to practice alongside the video. Example words and a short phrase are provided. The video concludes with a practice cue, encouraging learners to engage with the land themselves as a way to experience and practice the sound.

Visual cues and minimal text were used intentionally to emphasize sound, movement, and observation rather than technical explanation. All videos were produced using my own equipment, including a camera, tripod, and Bluetooth microphones, and were edited using iMovie and CapCut. The content of the videos mirrors the teachings, metaphors, and practice cues presented in the written guide, supporting seamless integration of written and visual learning. Below I provide a table of the thirteen sounds and their associated metaphor.

Table 3. The Thirteen Sounds and Their Metaphors

Glottal stop ʔ - wuʔu	The glottal stop is the moment between breaths . A quiet pause where sound folds inward before opening again. It is the tightening of the throat just before calling out, like the deep inhale before speaking, or like the land pausing briefly before inviting the next sound.
Cent sign ç - çuku	The Ktunaxa ç, known as the cent sign , begins with a quick burst of air that flows into a steady hiss: like steam rising from water being poured on a fire : tsss.
Hard cent sign č - čit	The sound č lives in the bright, sudden calls of the forest. It is the quick chirp of a chipmunk echoing between trees. It comes and goes in a heartbeat, full of alertness and motion. This sound reminds us that even the smallest voices carry strength, direction, and life.
Regular k K – kaçkaç	The sound of k is a stone striking wood : firm, grounded, and alive. It is the knock of the land’s heartbeat. Like the woodpecker tapping a tree, it reminds us that even small sounds carry power and that each knock travels far through the forest.
Hard k Ķ - kikit	The sound of k lives in the forest floor: the crisp, clean snap of twigs underfoot . It is the sound of strength and awareness, the sudden release that follows quiet stillness. k reminds us that every step on the land is heard, that the ground responds to our movement.
Hard p Ṗ - piṑ	The sound Ṗ lives in the land like a berry bursting between your fingertips or squished in a bowl: sudden, vibrant, full of life.
Regular q Q – qustit	The sound of q is the sound of berries hitting the bottom of a bucket . It is the deep, resonant voice of the land that echoes gathering.
Hard q Ḷ - Ḷaxu	The sound Ḷ lives in the sudden crack of two stones striking . It is a deep force that builds in silence, then releases in a single burst after a held breath. This sound carries intention and precision, like a strike made only once, and only when needed. Ḷ reminds us that the land speaks suddenly

	too, in breaks, shifts, and fractures that arrive without warning, yet echo with power.
Hard t Ṭ - ṭawu	The sound ṭ is a raindrop striking a puddle, or a log, sudden, precise, and gone in an instant. It lands with intention, marking the moment before disappearing into stillness. Each sound is brief, but it carries direction and clarity. ṭ teaches us that movement does not need to be loud to be powerful: even the smallest strike can create a ripple.
Barred L ḷ - ḷawiyat	The sound of ḷ is the sound of a digging tool sliding into soil : metal meeting roots and stones. That scraping vibration mirrors the way the tongue moves inside the mouth. Your tongue becomes a harvesting tool: tracing the land, meeting resistance, moving with intention. The sound ḷ carries the memory of digging, gathering, and listening to what lives beneath the surface.
X – xa·xa·	The sound x comes from our relatives, the crows , who gave us the word xa·xa·. Their voice lives in the back of the throat: deep, airy, and resonating through the land.
Hard m Ṁ - camna	The Ṁ is the sound of an interrupted drumbeat . Your chest and lips become the drum, releasing energy in each pulse and connecting body, breath, and sound.
Hard n̄ Ṇ - ṇiktama?ka	The sound ṇ is stepping on tightly packed winter snow . At first, your weight settles quietly, then there is a tiny, crisp give, that soft internal crunch before you fully step through.



Figure 6. A Basket of Ktunaxa Sounds by Author

8.2 Pronunciation Guide

The second bundle offering is a 32-page pronunciation guide titled, *Collecting Sounds in ʔamakʔis Ktunaxa: A Land-Based Ktunaxa Pronunciation Guide*¹². The guide presents all 27 Ktunaxa sounds, incorporates the thirteen articulation videos, and provides a land-based metaphor for each sound. Rather than following alphabetical order, the sounds are organized into related categories, such as vowels, regular stops, glottalized stops, and resonants, allowing learners to approach them in a relational and meaningful framework. Each category is framed through a land-based metaphor, situating sound production within the broader context of connection to the land and relationships within the language. These metaphorical titles were designed to reflect the distinctive way each sound category generates sound, and how it can relate to the land.

Table 4. *Sound Categories and the Land-Based Metaphors*

Sound Category	Land-Based Metaphor Title
Glottal stop (ʔ)	The Breath that Pauses
Vowels (a, i, u, a·, i·, u·)	Breath of the Land
Regular stops (ç, k, p, q, t)	Heartbeat of the Earth
Glottalized Stops (ç̣, ḳ, p̣, q̣, ṭ)	The Land's Sudden Movements
Fricatives (h, ł, s, x)	The Flowing Sounds of the Land
Resonants (m, n, w y)	Inner Pulse of the Land
Glottalized Resonants (ṃ, ṇ)	Interrupted Pulse of the Land

¹² If you would like to see the guide, see Appendix A to request access.

The guide begins with an introduction that explains its purpose, the spirit of our sounds, the approach of teaching through the land, the Ktunaxa alphabet and sounds, stress and intonation, and the overall organization of the guide. To support learners, I developed a **three-tiered system** to classify sounds according to their relative difficulty. **Tier 3** includes the easiest sounds, many of which are found in English. These require little practice because they are similar to familiar English sounds. These include a, i, u, p, t, h, s, m, and n. **Tier 2** includes moderately challenging sounds that are not typically found in English. They can be learned through practice and careful listening to sound contrasts. These include ʔ, a·, i·, u·, ç, ʈ, and x. **Tier 1** includes the most difficult sounds, which are not found in English and often require the most effort for new learners to hear and produce: ç̣, ḳ, ḳ̣, ṃ, ṇ, p̣, q̣, q̣̣, and ṭ. The regular k is included in Tier 1 because, although it can sound similar to English k, it is often confused with the regular q in Ktunaxa. The tier system is designed to help learners and teachers focus on the sounds that require the most attention. This aligns with the idea of functional load, where Tier 1 sounds are essential in distinguishing meaning in speech and often confused, and Tier 3 sounds are less of an issue (see figure 6 and 7).

Each sound entry includes a teaching, a metaphor, a word, and phrase examples with linked audio. Tier 1 sounds, and some Tier 2 sounds, also include a practice cue, a reflection question, and a 1–2-minute video demonstrating articulation filmed on the land. Only thirteen sounds have a video because these are the most challenging for learners, and seeing the sound produced visually helps build understanding and confidence. Every sound is paired with a word and an image for context. For example: a – ʔamak, i – ʔinmisa, and u – ʔupxa. Audio is available through QR codes and clickable links to a dedicated website (see Section 8.3), ensuring learners

can hear proper pronunciation. Because this guide focuses on speaking and pronunciation, having access to audio is critical for effective learning.

@KtunaxaPride

Collecting Sounds in ʔamakʔis Ktunaxa | 19

č - čit

Meaning: quickly, rapidly, fast

Tier 1: Hard Sound



Teaching

The hard č is formed just like the regular č, with the tongue placed high and slightly forward in the mouth, but this time, the breath is briefly held in the glottis before being released. That held breath creates a **sharp popping sound**, quick and purposeful. It is sharper than č and distinct from t or k. It lives in the front of the mouth but carries force from deep inside. With practice, you will begin to hear, and feel, that moment of tension before release.

Metaphor

The sound č lives in the bright, sudden calls of the forest: the **quick chirp of a chipmunk** echoing between trees. It comes and goes in a heartbeat, full of alertness and motion. This sound reminds us that even the smallest voices carry strength, direction, and life.



Practice

[CLICK HERE](#)
or [SCAN QR](#)
code:



Go to a quiet forest place. Listen for the chipmunk's voice or imagine it nearby. Take a breath and make quick, short bursts of sound: "č, č, č." Feel the sound pop from the center of your mouth. Move your hand in a quick flicking gesture with each sound, like the chipmunk darting across the ground.

Reflection

What small voices remind you that movement and breath are alive all around you?

Word Examples

- hawač - to swim underwater
- ču-ču - fish hawk
- kačtaʔmak - corn

Phrase Example

čkaknikčun kačtaʔmak
Pass me the corn.

k - kikit

Meaning: food

Tier 1: Hard Sound



Teaching

The hard k is formed at the back of the throat. Air gathers behind the tongue and is briefly held before it bursts outward with a sharp release. Place the back of your tongue against the soft palate. Hold your breath briefly, then release. You should feel a pause in the throat, followed by a burst of air from the back of the mouth. The sound of the hard k is distinct from the hard č, and you can hear it more forward in the throat than the č. The sound largely differs from the regular k since it produces a more forceful popping sound.

Figure 7. Page 19 of *Collecting Sounds in ʔamakʔis Ktunaxa* by Author.

s - sina

Meaning: beaver

Tier 3: Easy Sound



Teaching

The Ktunaxa **s** sounds like the English **s**, as in *sun*. It is one of the smoother fricatives: light, steady, and easy to recognize. The sound of **s** is the soft wind brushing across the field at dawn gentle but alive.

Word Examples

- sina - beaver
- xaxas - skunk
- naqsaq - marten

CLICK HERE
or SCAN QR
code:



Phrase Example

hanʔu qatiyaxni sinas

Muskrats live where beavers live

This sound is considered **Tier 2**. It is not difficult to produce once you understand where it lives, but it requires **focused listening and awareness**, especially at first. In fast speech it is sometimes mistaken for **h**, so slowing down your breath and exaggerating the airflow will help refine your pronunciation.

The sound **x** comes from our relatives, the **crows**, who gave us the word *xa·xa*. Their voice lives in the back of the throat: deep, airy, and resonating through the land.

Practice

CLICK HERE
or SCAN QR
code:



Crouch slightly and spread your arms like wings. As you breathe out, let the sound **x** flow steadily from the back of your throat: x... x... x... As you speak, imagine the crow's call traveling through the trees: alive, raw, full of message. Feel the vibration at the uvula, in your throat and chest, as though the land is speaking through you.

x - xa·xa·

Meaning: crow

Tier 2: Moderate Sound



Teaching

The Ktunaxa **x** does not exist in English. The closest example is the **ch** in the German name *Bach*, but even that is only an approximation. To produce the sound, place the **back of your tongue near the uvula**, the small "dangly" part at the back of your throat. With your tongue there, try making the **English h**. Or like you are clearing phlegm from your throat. It should create a **breathy, forceful friction** in the back of the throat, **a deep hiss, not a burst**.

Word Examples

- xa·xa - crow
- sxayúk - wild onion
- kaxax - turtle

Phrase Example

ʔinmisani kamkuʔukuʔ xa·xa:
Six black crows.



Figure 8. Page 25 of *Collecting Sounds in ʔamakʔis Ktunaxa* by Author.

At the end of the guide, there is a section dedicated to “**other sounds**,” which includes diphthongs and double consonants. This section provides an explanation of these sound categories, along with three example words and one phrase, each with linked audio. Following this, there is a page focused on **word pairs**, which was included to support learners in distinguishing common sound contrasts that are often challenging for beginners. These contrasts

include (a vs. a·), (i vs. i·), (u vs. u·), (ç vs. ç̣), (k vs. ḳ), (p vs. p̣), (q vs. q̣), (t vs. ṭ), (k vs. q), (ḳ vs. q̣), and (h vs. x). The page features words that are spelled identically except for a single sound, with linked audio to demonstrate the differences. Due to the morphological complexity of Ktunaxa, it was sometimes difficult to find true minimal pairs (Guntly, 2014). In cases where true minimal pairs were not available, I selected words that were closely matched in spelling to illustrate the sound contrast.

The guide was designed and written by me using Canva, while the cover page was illustrated by Darcy Luke, a Ktunaxa artist (see figure 9). The cover design reflects the process of gathering and harvesting **ʔa·kuḳp̣ṭuḷaṭ**, serving as a metaphor for how I collected and documented sounds across ʔamakʔis Ktunaxa. The illustration depicts a cedar bark basket filled with berries, each representing a letter. This imagery embodies the central metaphor of the project: just as land-based practices involve careful gathering and relationship with the land, so too does the collection of sounds. Being on the land allows us to gather, “consume,” and internalize these sounds, integrating them into our bodies and our language.



Figure 9. Illustration: *Collecting Sounds in ʔamakʔis Ktunaxa* by Darcy Luke.

8.3 Audio, Website, and Access

To ensure accessibility across formats, audio and video materials were integrated through a companion website developed using **Google Sites**. This platform allows users to access materials via clickable links in the digital guide or QR codes in the print version. Audio recordings are hosted through the **Ktunaxa FirstVoices** website, maintaining continuity with established Ktunaxa language resources and supporting user accessibility. Videos were published as unlisted videos on YouTube.

Initially, integrating audio and video presented challenges because the materials were hosted on separate platforms, and a single QR code could not provide seamless access. To address this, I created a website to host both audio and video in a single, accessible location. While it was not possible to embed the audio directly on the site, since the recordings reside on FirstVoices and would require permission to download, I linked each audio file via a hyperlink. This approach allowed me to use existing resources without duplicating work. The Google Site was simple to create, and I intentionally kept text minimal, as the site is meant to accompany the guide. Each sound entry has its own page where users can listen to audio and watch videos. An additional page describes the vocal tract and provides a 30-minute video of the Ktunaxa alphabet that I created nearly four years ago.

During development, I noticed that several words and phrases on FirstVoices lacked audio recordings. In these cases, I worked with my mentor, Mary, to record new audio and upload it to the FirstVoices site. These recording sessions became important learning opportunities, allowing me to deepen my understanding of Ktunaxa grammar, meaning, and usage. For example, one phrase I originally included was “Skikiṭ ṭikni ʕahats kqahaxaṭṭin” (The horses are eating grass). Mary explained that ṭik (to eat) is not the correct verb to use in this context. Instead, the phrase should be “Skikiṭ ṭikʕik kqahaxaṭṭin.” The verb ṭikʕi (for animals to be fed) is used specifically for animals such as horses and cows. Because this verb is used for animals that typically eat grass or hay, the noun ʕahat (grass/hay) is unnecessary.

Another example involved the noun wuṭu. I had written “Hu skikiṭ ṭi·kuṭni wuṭu” (I am drinking water). Although I had often heard wuṭu used in this context and even found similar examples on FirstVoices, Mary clarified that wuṭu refers to a large body of water, such as a lake.

The word *napituk* is more appropriate for drinking water, as it refers to water from a river or spring. Since people would traditionally drink from springs rather than lakes, the phrase needed to be revised accordingly. These examples demonstrate the learning that occurred through collaboration with my mentor and illustrate how Ktunaxa language encodes relationships with land, water, and animals. They show how meaning is embedded in specific word choices and how research and teaching practices can be mutually informative.

These bundle offerings are intended to support adult learners, teachers, and community members in developing accurate pronunciation while strengthening relationships to land, body, and Ktunaxa ways of knowing. The project also contributes to broader discussions on Indigenous language revitalization by demonstrating how land, culture, and spirit can inform and transform pedagogical methods. By anchoring sound learning in spiritually meaningful and culturally familiar practices, the guide becomes more than a teaching tool, it becomes a healing one, designed to awaken ancestral memory and reaffirm identity.

9. Teachings & Reflections

“If your research hasn’t changed you as a person, then you haven’t done it right”

(Wilson, 2008, p. 135).

My basket is filled with the sounds I have collected. Along the way, I may have eaten a few here and there, the colour of the sounds staining my fingers and tongue; a reminder that these sounds are now part of my body. A long couple of months of preparing, seeking, gathering, collecting, harvesting, drying, and bundling these sounds to be shared with you. A wonderful offering that I am honoured to share with others. A process that taught and changed me. For too long, I felt I did not know who I was. I did not know my responsibility, and consequently, I lost my vision and my purpose. Feelings of being alone, shame, imposter syndrome, and doubt crept into my mind, even as I was embarking on this journey. Did I really know how to do this? How do I come to know things? What can I do to help my community and language? Yet the familiar memories of being on the land and the knowledge of what I have learned come flowing in. I *do* know. As I collected these sounds, bundled them, and now offer them to you, I reflect on that process and what I have come to create.

First, I reflect on how I gather and harvest ʔa·kukpłuʔa. That process has taught me about patience, attentiveness to the land, trust in my embodied and ancestral knowledge, connection, belonging, and identity. Ceremonial protocol became a method: offering tobacco, prayer in Ktunaxa, and listening for consent from the tree. Emotional states, doubt, fear, and joy, are valid data and remind me that spirit and heart are present in all stages of learning. I originally wondered how ʔa·kukpłuʔa could be a metaphor for my project, but it shifted toward ceremony as research and land as teacher. I embraced storytelling, memory, and process as valid forms of academic rigor. At the beginning of this research journey, I did not know that I was going to

create a pronunciation guide, articulation videos, and a website. But as I listened, and reminded myself of my previous research, I knew this is what I needed to do, not to create just any conventional pronunciation resources, but ones that reflected my Ktunaxa ways of knowing.

What did my Elders always talk about? Belonging, connection, and identity. “Part of knowing oneself is having respect, reciprocity, and responsibility through the relationships and accountability to the land and all living things...because you are part of all living things” (Morigeau, 2020, p. 90). So, how does it all come together? It comes together through our belief and interconnection to ʔa·kxam̓is ɥapi ɥapsin and remembering who we are. The seeds of our language are scattered across ʔamakʔis Ktunaxa, and we must be ready to seek and collect them. We must return to our traditional ways of knowing and remember who we are through our history, creation stories, songs, ceremonies, our names, the names of our lands, plants, animals, laws, and stewardship principles in order to find them. “Understanding the relationships with everything is so important; the relationships with the Nupikas (spirits), the ancestors, the living, the land, the earth, and the universe are integral to being Ktunaxa. Everything is interrelated and interconnected” (Morigeau, 2020, p. 87). Thus, this project reflects that, and how we can embark on that journey together.

I learned in this process that the land is a living entity, and that you must visit with the land as you would with a relative. I visited with the land as I would with my mentor or my grandma. The importance of building those relationships, sitting down, having a cup of tea, talking, laughing, and sharing stories, is the same with the land. This relational practice is often forgotten. Instead, I was reminded to introduce myself to the land once again, speak to it, give an offering, listen, talk, and laugh. And the land shared its knowledge with me. It shared the sounds of our language. Never forget your roots, quite literally, that we are children of the land, and our

language was born from it. This process is more than a collection of sounds; it is a reclamation of remembering, place, relationship, and responsibility.

9.1 How to Effectively Utilize the Guide

Now that these resources have been created, an important question becomes: how can they be used in meaningful ways? This is a question I often ask myself when encountering community-based language materials. The suggestions below offer flexible ways of integrating the guide into in-person, online, classroom, urban, and family-based learning contexts. The pronunciation resources are intended for anyone who is learning or reclaiming Ktunaxa, though they are especially designed to support teachers and adult language learners (see Section 9.3 for why).

Teachers are encouraged to use these materials alongside pronunciation-focused lessons or as part of a broader emphasis on pronunciation within their classes. The amount of time devoted to pronunciation will vary depending on learners' levels and the structure of the class. However, I suggest that in the early stages of learning, approximately 20–30% of class time be dedicated to developing learners' ability to distinguish (perception), produce (articulation), and meaningfully engage with Ktunaxa sounds within cultural and environmental contexts. After these initial sessions, pronunciation should continue to be revisited regularly through ongoing practice integrated into class time, with activities that combine listening and speaking.

These resources are designed as a land-based guide. For this reason, involving the land in learning is essential whenever possible. In in-person settings, this may involve holding class outdoors and practicing sounds on the land. Learners can be invited to physically explore the metaphors shared in the guide through movement, gesture, and voice, or to create their own metaphors based on their experiences. A class session might begin by spending quiet time on the land, allowing learners to listen, observe, and feel their surroundings. Guiding questions might

include: *What are you feeling? How does your body feel? What sounds do you hear? What do you smell?* This can be followed by discussion about Ktunaxa sounds and how they are connected to the land and to lived experience. Several sounds in the guide include reflection questions that can be used to support focused practice. Learners can also be invited to suggest additional metaphors or reflections that help them understand particular sounds.

The goal of these activities is to support the development of phonological awareness, an understanding of Ktunaxa sounds and how they work, while also strengthening learners' relationships to the land, to spirit, and to identity. Pronunciation is approached not only as a technical skill, but as a relational and embodied practice. Online classes and urban language learners need not be limited by the lack of physical access to outdoor spaces. Photos, videos, and audio recordings of the land can help learners enter a similar learning space. The articulation videos created for this project were filmed on the land for this reason, offering visual and auditory support for those who may not be able to learn outside. Instructors may also use guided activities, such as asking learners to close their eyes, listen to outdoor sounds, and imagine a place on the land that is meaningful to them. Learners can be invited to reflect on their sensory experiences using the same guiding questions. Homework activities might include practicing sounds on the land, reflecting on personal metaphors for particular sounds, or recording oneself and listening back for areas of growth. Throughout instruction, it is important to regularly play audio of words and phrases and to allow sufficient time for learners to practice speaking themselves.

Independent learners and families can use these resources in similar ways, while approaching technical explanations gently and at their own pace. Learners may also choose to create their own metaphor and articulation videos as a creative and engaging activity. Above all, these

resources are meant to be used in relationship, with family members, elders, mentors, and fluent speakers. They are intended to be shared, adapted, and shaped to meet the needs of each learner and community.

9.2 Limitations & Gaps

While I have put my whole heart, mind, and spirit into this work, I also recognize several limitations of the present project that I would like to acknowledge. Research in pronunciation teaching consistently shows that attention to suprasegmental features, such as stress, rhythm, intonation, and connected speech, is essential for developing accurate pronunciation in second-language acquisition (Kang & Staples, 2025; Pedrazzini, 2016), particularly in Indigenous language learning contexts. After reviewing existing Ktunaxa pronunciation resources, I found very few materials that focus or address prosodic features in Ktunaxa.

The pronunciation resources developed for this project therefore focus primarily on segmental features, namely individual consonants and vowels, with less emphasis on how these sounds occur in natural, connected speech. Although I included a small number of phrases, this is not sufficient to support learners in hearing and practicing tone, stress, intonation, and pitch in meaningful ways. Given the timeframe of this master's project, I was unable to develop more extensive suprasegmental-focused resources.

It should also be noted that, while suprasegmental features are important, developing these types of approaches presents challenges in the context of Ktunaxa. Ktunaxa is a language isolate with a very low number of speakers. As a result, opportunities to hear the language in natural, conversational settings are limited, and much of the available audio documentation consists of recordings from the 1950s, often in storytelling contexts. For this reason, a focus on

individual sounds should not be viewed as a limitation for learners. Rather, it reflects both the current state of available resources and the broader reality that pronunciation teaching in Indigenous language contexts is still emerging and being actively explored (Bliss et al., 2018).

Despite these limitations, I see the materials in this project as an introductory starting point for developing phonological awareness and building a deeper relationship with Ktunaxa sounds and with the land. To support more holistic pronunciation learning, it is important that these resources be used alongside sustained listening to audio recordings of fluent speakers and regular opportunities for learners to practice speaking themselves. Possible activities include listening to language recordings while spending time on the land, inviting learners to tell short stories to one another outdoors and then retell what they heard, or having learners record themselves speaking a short phrase, listen back, and identify areas for improvement.

I am also uncertain about how effective the word-pair section may be for supporting accurate pronunciation, since research suggests that Ktunaxa sounds are best understood in connected speech rather than in isolated words. Sounds may be weakened, deleted, or altered as suffixes are added and as stress patterns shift. In addition, many of the word pairs available are not commonly used in everyday conversation, which may limit their practical usefulness for learners. They can still be useful for hearing these sound contrasts in isolation and for building phonological awareness at the beginning stage.

9.3 Next Steps

Building on the limitations identified above, several next steps are envisioned for expanding and strengthening this work. The pronunciation resources were developed primarily for adult Ktunaxa language learners and teachers. I identified gaps in pronunciation instruction for adults

within existing Ktunaxa language materials. While children often acquire the sounds and pronunciation of a language with relative ease, adult learners bring established phonological patterns from their first language that can influence how they perceive and produce new sounds (Bird et al., 2023; Bliss et al., 2018). As Hayes (2009) notes, “When we speak, we automatically obey hundreds, perhaps thousands of phonological rules, but we can neither observe nor articulate what these rules are” (p. 27). Sound acquisition is an inherent and intuitive process in infancy and early childhood; however, this intuitive capacity is often diminished in adulthood.

Importantly, the vocal tract contains many muscles responsible for producing and shaping speech sounds, and like other muscles in the body, these can be strengthened through practice. Although the amount of time required varies among individuals, structured training and sustained motivation can support adult learners in improving their pronunciation. For this reason, pronunciation instruction is frequently emphasized in research on adult second-language learning, as adult learners must navigate established habits, first-language phonological rules, unfamiliar articulatory movements, and persistent accents.

Consequently, adult learners often require more explicit support in pronunciation. While these resources may also be useful for children, they are best applied with less emphasis on technical descriptions and more through simple, sound-based explanations, for example, simply describing the x sound as sounding like xa·xa·. Overall, the resources are intended to support Ktunaxa language teachers working with adult second-language learners, as well as motivated learners who wish to practice independently.

The next steps for sharing these resources involve dissemination among Ktunaxa language teachers and within the broader Ktunaxa Nation. I plan to share the materials directly with teachers and individuals involved in language revitalization work, as well as through community

events. An additional step will be to pilot the resources in classroom settings to determine whether they effectively support more accurate Ktunaxa pronunciation. A final future direction is the development of a pronunciation-focused workshop for teachers and community members, ensuring that learners and instructors are engaging with shared approaches and understandings of sound production. Together, these reflections point to the need for future work that places greater emphasis on suprasegmental features and connected speech as central components of Ktunaxa pronunciation teaching and learning.

10. Conclusion

This project emerges from the understanding that sound is not just the beginning of language, but the beginning of relationship; our first connection to land, identity, and spirit. While much of Indigenous language revitalization has focused on grammar and vocabulary, the foundational element of sound remains underexplored, under-resourced, and too often disconnected from cultural context. Yet for Ktunaxa, sounds are not abstract units to be memorized, they are living expressions rooted in ʔamakʔis Ktunaxa, shaped by our stories, ceremonies, and the voices of all living things. By using a land-based, ceremonial, and culturally grounded approach, this research reclaims a Ktunaxa way of teaching and learning language that is relational, embodied, and spiritually guided. Building on my previous research into gaps in the Ktunaxa writing system, I turned upstream to the breath, the land, and sound, acknowledging that pronunciation is not just a technical skill, but a way of being in relation.

This work challenges dominant Western norms by centering Indigenous methodologies, and a Ktunaxa worldview guided by the practice of gathering and harvesting ʔa·kukpłutł. This methodology refuses approaches that separate language from land and ceremony. It offers not just a pronunciation guide, but a pathway for Ktunaxa learners and teachers to reconnect with the spirit of our language. In doing so, this project contributes to a growing body of work that insists our languages are interconnected to our entire being, and that we must return back to the land to bring our languages home. Through this work, I asked, 1) In what ways are Indigenous sound systems misrepresented when separated from their cultural and ceremonial context; and 2) How can Ktunaxa sounds be understood and taught in ways that honour land, ʔa·kxam̓is ǰapi qapsin (All living things), ceremony, and spirit?

In seeking these answers, this research became more than a guide; it became an offering. An offering to the land, to the language, and to the future generations who will continue to breathe life into both. By centering land and relationality, this work aims to reclaim not only the sounds of our language, but also the ways of knowing from which those sounds emerge. Throughout this project, I have demonstrated how Indigenous sound systems are often misrepresented in Western linguistic discourse by being dissected into discrete units and described as inherently meaningless, particularly when they are removed from their spiritual and cultural connections to the land and to the people who speak them. When Indigenous languages go dormant, the knowledge of the land also becomes quiet. The teachings carried within these languages, passed down through generations through careful observation and relationship, risk becoming fragmented or forgotten. As a result, the land suffers, our identities suffer, and our cultures suffer. When language is taught from a dissected, disembodied, and fragmented perspective that does not recognize languages as living beings, we overlook the spiritual relationships we hold with our languages and the knowledge embedded within their sounds.

In contrast, this project has shown that Ktunaxa sounds are deeply connected to spirit and identity, to the long histories and relationships we have with our lands, and to the understanding that our language was born from the land itself. The land gifted us our sounds. Reclaiming and speaking those sounds is therefore a form of ceremony, one that we are called to honour, reclaim, and strengthen. It is an act of remembering who we are, affirming our belonging, and renewing our relationships with our identity, our spirit, and our interconnection to ʔa·kxamis q̇api qapsin. I have shown how Ktunaxa sounds can be understood and taught in ways that honour land, ʔa·kxamis q̇api qapsin (all living things), ceremony, and spirit by creating resources that connect Ktunaxa sounds directly to the land. These resources are an attempt to represent the biosphere of

the soundscape of ʔamakʔis Ktunaxa and to support learners in developing a deeper connection to the language and land, while also helping them understand the technical nature of the sounds through land-based and culturally relevant metaphors.

I leave you with this: My language has taught me to listen to the breath of my ancestors that echoes and transcends into the voices of the land, the songs that birds sing, the buzzing of bees, a coyote's howl at night, the rapid water flowing from the creek below my feet, or the tranquility of just being on the land. The footsteps of our ancestors that disguise themselves as the tracks of nupqu, klawla, ɕupqa, or swaʔ. Or the sweet fragrance of ʔa·knuqyuk, and the earthy aroma of ʔa·kukpʉtaʔ. The greatest gift I have been given is the ability to speak my language. To keep the voice of my ancestors alive, one that the land remembers. A familiar voice that feels like a mother's embrace. To see the world from a different perspective. I am rich in the knowledge and wisdom I have been given. And yet, I still have a lot to learn. Taxa.

References

- Absolon, K. E. (2022). *Kaandossiwin: How we come to know: Indigenous re-search methodologies* (2nd edition.). Fernwood Publishing.
- Andrew, J. (2023). *The significance of ʔamakʔis Ktunaxa*. (Master's thesis). Royal Roads University. Retrieved from <https://www.viurrspace.ca/server/api/core/bitstreams/f077ffec-9948-40c8-ad3e-d337bb082139/content>
- Bird, S. (2020). Pronunciation among adult Indigenous language learners: The case of SENĆOŦEN /tʰ/. *Journal of Second Language Pronunciation*, 6(2), 148-179. <https://doi.org/10.1075/jslp.17042.bir>
- Bird, S., Claxton, R. A., & Percival, M. (2023). Seeing speech: Using Praat to visualize Hul'q'umi'num' sounds. *Language Documentation & Conservation*, 17, 297–324. <https://hdl.handle.net/10125/74739>
- Bird, S., & Kell, S. (2017). The role of pronunciation in SENĆOŦEN language revitalization. *Canadian Modern Language Review*, 73(4), 538–569. <https://doi.org/10.3138/cmlr.4060>
- Bird, S., & Miyashita, M. (2018). Teaching phonetics in the context of Indigenous language revitalization. In *Proceedings of the ISAPh 2018 International Symposium on Applied Phonetics*, (pp. 39-44). <https://doi.org/10.21437/isaph.2018-7>
- Bliss, H., Bird, S., Cooper, P. A., Burton, S., & Gick, B. (2018). Seeing speech: Ultrasound-based multimedia resources for pronunciation learning in Indigenous languages. *Language Documentation & Conservation* 12, 315-338. <http://hdl.handle.net/10125/24771>
- Bochnak, M. R., & Matthewson, L. (Eds.). (2015). Introduction. In *Methodologies in Semantic*

- Fieldwork*. Oxford University Press.
- <https://doi.org/10.1093/acprof:oso/9780190212339.003.0001>
- Britannica. (n.d.). *Blackfoot*. Encyclopedia Britannica.
- <https://www.britannica.com/topic/Blackfoot-people>
- Brown, A. (2014). *Pronunciation and phonetics: A practical guide for English language teachers* (1st ed.). Routledge. <https://doi.org/10.4324/9781315858098>
- Celce-Murcia, M., Brinton, D. M., & Goodwin, J. M. (2010). *Teaching pronunciation: A course book and reference guide* (2nd ed.). Cambridge University Press.
- Chen, M., Lee, C., Fish, N., Miyashita, M., & Randall, J. (2024). Cloud-based platform for Indigenous language sound education. In *Proceedings of the Seventh Workshop on the Use of Computational Methods in the Study of Endangered Languages* (pp. 1-6). Association for Computational Linguistics <https://par.nsf.gov/servlets/purl/10533058>
- Chiblow, S. & Meighan, P. (2022). Language is land, land is language: The importance of Indigenous languages. *Human Geography*, 15(2), 206-210. <https://doi.org/10.1177/19427786211022899>
- Derwing, T. M., & Munro, M. J. (2005). Second language accent and pronunciation teaching: A research-based approach. *TESOL Quarterly*, 39(3), 379–397.
- <https://doi.org/10.2307/3588486>
- Dryer, M.S. (1991). Subject and inverse in Kutenai. In J.E Redden (Ed.), *Papers from the American Indian Languages Conferences*, held at the University of California, Santa Cruz (Vol. 16, pp. 183-202). Carbondale IL: Occasional Papers on Linguistics.
- Dunlop, B., Gessner, S., Herbert, T., & Parker, A. (2018). *Report on the Status of B.C. First Nations Languages*. First Peoples' Cultural Council.

- <https://fpcc.ca/wp-content/uploads/2020/07/FPCC-LanguageReport-180716-WEB.pdf>
- Eberhard, D. M., Simons, G. F., & Fennig, C. D. (Eds.). (2024). *Ethnologue: Languages of the world* (27th ed.). SIL International. <https://www.ethnologue.com>
- Endangered Languages Project. (2022). *Opening keynote - Dr. Lorna Wanosts' A7 Williams*. YouTube. https://www.youtube.com/watch?v=UA1_ukSK2ts&list=PLPTs2Q1q0azXiR99U_rNSgN2glH0nrB5b&index=2
- Engman, M. M., & Hermes, M. (2021). Land as interlocutor: A study of Ojibwe learner language in interaction on and with naturally occurring 'materials.' *The Modern Language Journal*, 105(S1), 86–105. <https://doi.org/10.1111/modl.12681>
- Everett, C. (2013). Evidence for direct geographic influences on linguistic sounds: The case of ejectives. *PloS One*, 8(6), Article 65275. <https://doi.org/10.1371/journal.pone.0065275>
- Finstad, tisholas. (2022). *Sqwiilqwul'tul 'words used when talking to one another.'* (Master's project, Uvic). <http://hdl.handle.net/1828/14295>
- First Peoples' Cultural Council. (2023). *t'i xwey kwems sqwalten "our language is awake"* [News release]. First Peoples' Cultural Council. <https://fpcc.ca/wp-content/uploads/2023/04/FPCC-News-Release-pentlach-Language-Announcement-29.11.2023-4.pdf>
- Fish, N. & Miyashita, M. (2017). Guiding pronunciation of Blackfoot melody. In R. Jon, J. Martin, L. Lockard, & W.S. Gilbert (Eds.), *Honoring our teachers* (pp. 203-210). Flagstaff, AZ: NAU.
- Flege, J. (1995). Second language speech learning: Theory, findings, and problems. In W. Strange (Ed.), *Speech perception and linguistic experience: Theoretical and methodological issues in cross-language speech perception* (p. 233–272). Baltimore: York

Press.

- Foote, J. A., Holtby, A. K., & Derwing, T. M. (2011). Survey of the teaching of pronunciation in adult ESL programs in Canada, 2010. *TESL Canada Journal*, 29(1), 1–22. <https://doi.org/10.18806/tesl.v29i1.1086>
- Foote, J. A., Trofimovich, P., Collins, L., & Urzúa, F. S. (2016). Pronunciation teaching practices in communicative second language classes. *Language Learning Journal*, 44(2), 181-196. doi:10.1080/09571736.2013.784345
- Fredriksson, A. (2026). There is a language in the landscape: Towards an ecology of meaning. *Language Sciences*, 115, 101793. <https://doi.org/10.1016/j.langsci.2026.101793>
- Gahr, T. L. (2013). *Creation stories – the origins of culture*. Indigenous Corporate Training Inc. <https://www.ictinc.ca/blog/creation-stories-the-origins-of-culture>
- Garvin, P. L. (1948). Kutenai I: Phonemics. *International Journal of American Linguistics*, 14(2), 63–73.
- Gessner, S., Herbert, T., & Parker, A. (2022). *Report on the status of B.C. First Nations languages* (4th ed.). First Peoples’ Cultural Council. <https://fpcc.ca/wp-content/uploads/2023/02/FPCC-LanguageReport-23.02.14-FINAL.pdf>
- Guntly, E. A. (2014). Training category expansion with stops and ejectives in Ktunaxa. In N. Weber, E. Sadlier-Brown, & E. Guntly (Eds.), *Papers for the 49th International Conference on Salish and Neighbouring Languages* (UBC Working Papers in Linguistics 37, pp. 274–288). University of British Columbia.
- Hayes, B. (2009). *Introductory phonology*. Wiley-Blackwell.
- Hermes, M., Meixi, Engman, M. M., & McKenzie, J. (2021). Everyday stories in a forest:

- Multimodal meaning-making with Ojibwe Elders, young people, language, and place. *WINHEC: International Journal of Indigenous Education Scholarship*, 16(1), 267-301. <http://dx.doi.org/10.18357/wj1202120289>
- Hinton, L. (2002). *How to keep your language alive: A commonsense approach to one-on-one language learning*. Heyday.
- Johnson, F. N., Wehi, P., Neha, T., Ross, M., Thompson, V., Tibble, S., Tassell-Matamua, N., Shedlock, K., Fox, R., Penman, Z., Ritchie, T., Winter, T., Arahanga-Doyle, H., & Jose, P. E. (2024). Introducing “Ngaruroro”, a new model for understanding Māori wellbeing. *International Journal of Environmental Research and Public Health*, 21(4), 445-. <https://doi.org/10.3390/ijerph21040445>
- Kang, O., & Staples, S. (2025). Transdisciplinary intersections in second language pronunciation learning and teaching. *Language Learning*, 75(1), 5–29. <https://doi.org/10.1111/lang.70001>
- Kimmerer, R. (2017). The covenant of reciprocity. In Hart, J. (Ed.). *The Wiley Blackwell Companion to Religion and Ecology*. pp. 368-381.
- Kislowicz, H., & Luk, S. (2019). Recontextualizing Ktunaxa Nation v. British Columbia: Crown land, history and Indigenous religious freedom. *The Supreme Court Law Review: Osgoode’s Annual Constitutional Cases Conference*, 88(2), 205–229. <https://doi.org/10.60082/2563-8505.1366>
- Kootenai Culture Committee of the Confederated Salish and Kootenai Tribes. (1999). *Ksanka ?A-ktukaqwum: Kootenai dictionary*. Elmo, MT: Kootenai Culture Committee.
- Kovach, M. E. (2021). *Indigenous methodologies: (2nd Ed.)*. University of Toronto Press.
- Ktunaxa Nation. (n.d.). *Qat’muk Declaration*. Ktunaxa Nation.

<https://www.ktunaxa.org/who-we-are/qatmuk-declaration/>

Ktunaxa Nation Council. (n.d.). *Who we are*. Ktunaxa Nation Council.

<https://www.ktunaxa.org/who-we-are/>

Kutenai Language Task Force. (1989). *Kutenai Nation resource book*. Kootenay Indian Area Council.

Leonard, W. (2020). Musings on Native American language reclamation and sociolinguistics.

International Journal of the Sociology of Language, 2020(263), 85-90.

<https://doi.org/10.1515/ijsl-2020-2086>

Lothian, D., Akcayir, G., Sparrow, A., McLeod, O., & Demmans Epp, C. (2020). SoundHunters:

Increasing learner phonological awareness in Plains Cree. In I. Bittencourt, M. Cukurova,

K. Muldner, R. Luckin, & E. Millán (Eds.), *Artificial intelligence in education* (Lecture

Notes in Computer Science, Vol. 12163). Springer. [https://doi.org/10.1007/978-3-030-](https://doi.org/10.1007/978-3-030-52237-7_28)

[52237-7_28](https://doi.org/10.1007/978-3-030-52237-7_28)

Lozar, P. (2018). “My home is on both sides”: Indigenous communities and the US-Canadian

border on the Columbia Plateau, 1880s–1910s. *Ethnohistory*, 65(3), 391–415.

<https://doi.org/10.1215/00141801-4451374>

Lukaniec, M., & Palakurthy, K. (2022). Additional language learning in the context of

Indigenous language reclamation. In K. Geeslin (Ed.), *The Routledge handbook of second*

language acquisition and sociolinguistics (pp. 341–355). Routledge.

ᔨkamniᔨtik Children’s Truth and Reconciliation Society. (n.d.). *Kootenay Indian Residential*

School. <https://www.tkamnintik.com/kootenay-indian-residential-school/>

Manning, C. J. (1983). *Ethnohistory of the Kootenai Indians* (Master’s thesis). University of

Montana ScholarWorks. <https://scholarworks.umt.edu/etd/5855>

- McClay, E. (2017). *Focus in Ktunaxa: Word order and prosody* (Master's thesis). University of British Columbia.
- McIvor, O. (2013). *Protective effects of language learning, use and culture on the health and wellbeing of Indigenous people in Canada*. Foundation for Endangered Languages.
- Michigan Indian Legal Services. (n.d.). *Jay Treaty*. Retrieved July 7, 2025, from <https://www.mils3.org/self-help-and-education/federal-indiantribal-misc/jay-treaty>
- Miyashita, M., Randall, J., Chen, M., & Fish, N. (2024). Introducing the melodic transcription (MeT) scale for language documentation and application. In R. Autry et al. (Eds.), *Proceedings of the 39th West Coast Conference on Formal Linguistics* (pp. 352–361). Cascadilla Proceedings Project. <https://www.lingref.com/cpp/wccfl/39/paper3648.pdf>
- Montana Indian Language Program. (2016). *Ksanka reader: Woman, son, and monster; Grandmother Frog, Chipmunk and Owl; Rejection of Owl*. Kootenai Culture Committee.
- Morgan, L. (1991). *A description of the Kutenai language* (Doctoral dissertation). University of California, Berkeley. University of California EScholarship Repository. <https://escholarship.org/uc/item/0f76g7f2>
- Morigeau, C. (2020). *Ktunaxa traditional knowledge: Building Ktunaxa capacity for the future* (Master's thesis). Royal Roads University. <https://www.viurrspace.ca/server/api/core/bitstreams/4a2fac37-e3be-415c-98af-d109d728170c/content>
- Niitsitapi Pod. (2026). Soundscape & the flux: Notes from Niitsitapi Pod. TBA: Journal of Art, Media, and Visual Culture, 7(1). <https://doi.org/10.5206/tba.v7i1.23155>
- Pedrazzini, L. (2016). The principle of “correct pronunciation”: Teaching English as a foreign

language in the early twentieth century. *Language & History*, 59(1), 63-72.

<https://doi.org/10.1080/17597536.2016.1176292>

Perley, B. C. (2012). Zombie linguistics: Experts, endangered languages and the curse of undead voices. *Anthropological Forum*, 22(2), 133-149. <https://doi.org/10.1080/00664677.2012.694170>

Rorick, chuutsqa L. (2019). wałyaʃasukʔi naananiqsakqin: At the home of our ancestors: Ancestral continuity in Indigenous land-based language immersion. In K. W. Yang, E. Tuck, & L. T. Smith (Eds.), *Indigenous and Decolonizing Studies in Education* (1st ed., pp. 224–237). Routledge. <https://doi.org/10.4324/9780429505010-16>

Rosenblum, D. (2021). *Virtual visits: Indigenous language reclamation during a pandemic*.

Royal Society of Canada. <https://rsc-src.ca/en/voices/virtual-visits-indigenous-language-reclamation-during-pandemic>

Sivak, L., Westhead, S., Richards, E., Atkinson, S., Richards, J., Dare, H., Zuckermann, G., Gee, G., Wright, M., Rosen, A., Walsh, M., Brown, N., & Brown, A. (2019). “Language breathes life”—Barngarla community perspectives on the wellbeing impacts of reclaiming a dormant Australian Aboriginal language. *International Journal of Environmental Research and Public Health*, 16(20), 3918.

<https://doi.org/10.3390/ijerph16203918>

Standing Senate Committee on Aboriginal Peoples. (2016). *Border crossings: The implications of the Jay Treaty and related provisions for Aboriginal peoples in Canada and the United States* [Report]. Senate of Canada.

https://sencanada.ca/content/sen/committee/421/APPA/Reports/APPAJayTreatyReport_e.pdf

- Teit, J. A. (1930). Traditions and information regarding the Tonaxa. *American Anthropologist*, 32(4), 625–632.
- Teló, C., Suzuki, R., Lu, L., Okawa, G., Ahmed, T., Balmouddane, Z., Carvajal, M., Chen, K., Fallahnejad, M., Kim, B., Kovacs, A., Madkaikar, S., Mejía, L., Odal, A., Pham, T. T. D., See, Y. F., O’Brien, M. G., & Trofimovich, P. (2026). A collaborative journey in pronunciation: Lessons from a community-engaged accent bias project. *Journal of Second Language Pronunciation*. Advance online publication.
<https://doi.org/10.1075/jslp.25054.tel>
- Twigg, A. (2024). *Safeguarding your language through documentation: A toolkit for beginners*. Canadian Commission for UNESCO & University of Alberta. <https://doi.org/10.7939/r3-qvts-4p49>
- Twigg, A. (in preparation) *Written Whispers: Ktunaxa Perspectives on the Writing System*. ms.
- UNESCO. (2010). *Atlas of the world’s languages in danger* (3rd ed.). United Nations Educational, Scientific and Cultural Organization.
<https://unesdoc.unesco.org/ark:/48223/pf0000187026>
- Wilson, S. (2008). *Research is ceremony: Indigenous research methods*. Fernwood Publishing.

Appendix A

Collecting Sounds in ʔamakʔis Ktunaxa: A Land-Based Pronunciation Guide for Keeping the Spirit of Our Language Alive.

<https://drive.google.com/drive/u/0/folders/1kL0plXx-zwxOzxNm-0Zqb5KfbGZ-emli>

This appendix provides access to the major project developed as part of this research. The project is a 32-page Ktunaxa pronunciation guide designed to support land-based pronunciation and voice articulation through a Ktunaxa worldview of ʔa·kxam̓is q̓api qapsin (All Living Things). The guide includes explanations for all 27 letters of the Ktunaxa alphabet through land-based metaphors, thirteen articulation videos, and embedded QR codes that link to a companion website that includes audio recordings and video demonstrations. These elements are intended to be accessed in relation to the guide and support a multi-modal approach to language learning that centers listening, embodiment, and practice.

Access to Project:

This project is available online via a restricted link upon request from the author. To request access, email aiyanatwigg9@gmail.com.