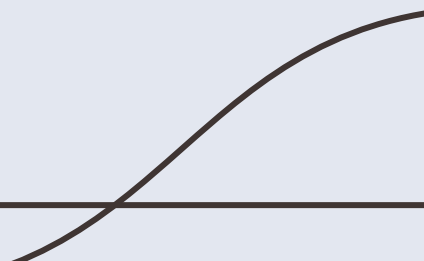




Educational Technology for Indigenous Languages: A Case Study of Lushootseed

Anne Drew Hu
(they/them)

PhD candidate



Traditional Greeting

haʔɬ sləʃil, Anne Drew Hu tsi dsda.

Good day, my name is Anne Drew Hu.

tulʔal čəd ʔal ti Kirkland, WA.

I come from Kirkland, WA.

pastəd čəd. huy čaydi čəd.

I am white and Chinese.

George Hu ti dbad. Carrie Hu tsi
dskʷuy.

My father is George Hu and my mother
is Carrie Hu.

How is culture embedded in this greeting?

haʔɬ sləʃil, Anne Drew Hu tsi dsda.

Good day, my name is Anne Drew Hu.

tulʔal čəd ʔal ti Kirkland, WA.

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George Hu ti dbad. Carrie Hu tsi
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My father is George Hu and my mother
is Carrie Hu.

Culture Embedded in Language

- This traditional greeting in the Lushootseed language centers our *place, people, and family*
 - Coast Salish culture values our roots and connections
 - To decolonize, we must learn from Indigenous languages
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Indigenous Languages

Range of the
Lushootseed language

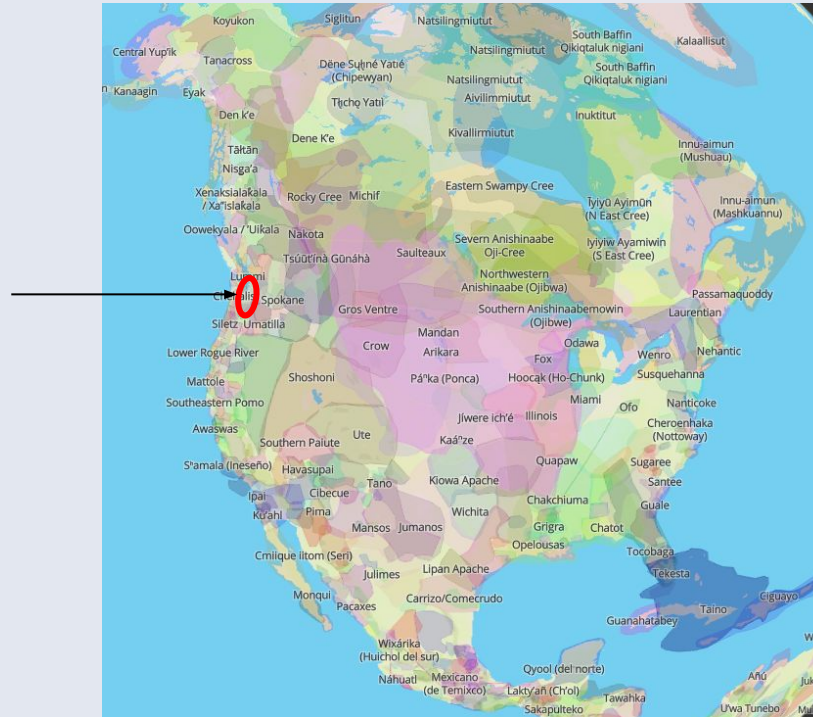


Image credit:
native-land.ca

Language and (De)colonization

- Residential schools disrupted language transmission
 - Colonizers knew language was key to culture and resistance
 - We are at an inflection point in the fate of many languages
 - If we can revitalize languages, decolonization will be possible
 - If not, colonization will be completed
-

Lushootseed (dx^wləšucid/tx^wəlšucid)

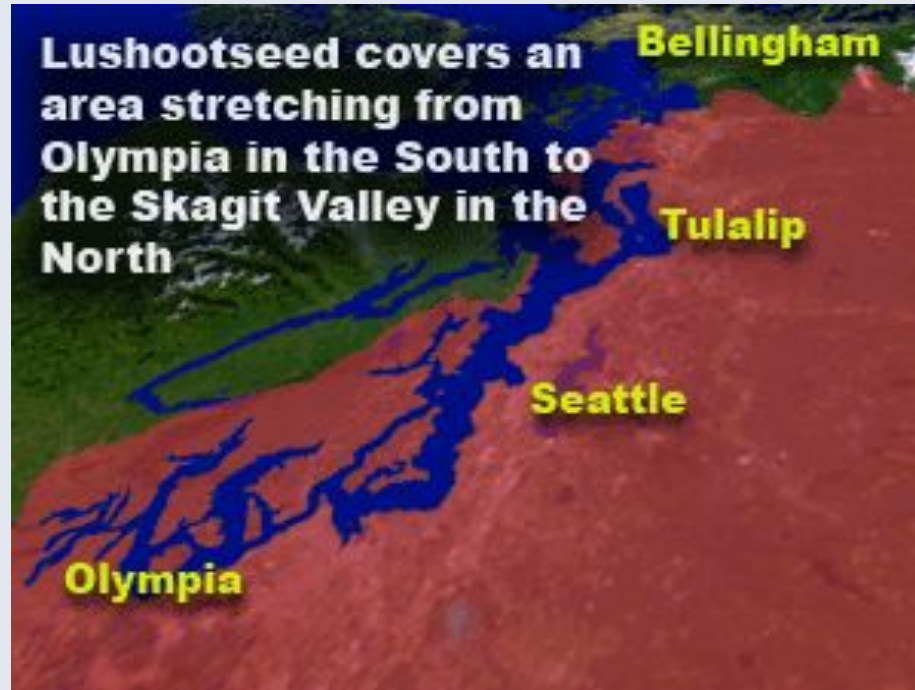


Image credit:
The Tulalip
Tribes

Lushootseed

- Currently no native speakers, small number of fluent speakers
 - Different revitalization efforts in several tribes
 - Language practices are deeply connected to place, identity, and religion
 - “The language comes from the land”
-

Vi Hilbert (taq^wšəblu)

Photo credit:
Lushootseed
Research



Vi “taq^wšəblu” Hilbert (1918-2008) was a native speaker of Lushootseed.

She collaborated with white settler academics to preserve the language.

Her writing is essential to learning Lushootseed.

Language-Culture Connections

- sbiaw - (n) coyote
- biawcut - (v) to act smart; person who pretends first to know and then pretends that he doesn't know.

Coyote (the animal) is a noun form of biaw (a verb).

What does this tell us?

Difficult for English Speakers

Lushootseed

46 letter alphabet

Uses ejective consonants

Verb-Subject-Object

Agglutinative morphology

Only 4 vowels

English

26 letter alphabet

No ejective consonants

Subject-Verb-Object

Analytic morphology

Many vowels and variations

Alphabet

Image Credit: [Puyallup Tribal Language Program](#)

Ejective



k'

k'aʔk'aʔ

Crow

Raised W




kw

kwədačiʔ

Shake Hands

Difficult sounds



tix^w

3 - Three



g'

g'wəʔalad

Stop

Agglutination & Word Order

<p>ʃu-g^wə/χal=ij-əd čəʃ will-open-it we</p> <p>predicate</p>	<table border="1"><tr><td data-bbox="687 401 813 638"><p>tiʔəʔ this</p><p>direct complement</p></td><td data-bbox="813 401 1141 638"><p>d-s√(h)əliʔ-du-b I/me-give(n to)</p><p>predicate</p></td><td data-bbox="1141 401 1632 638"><p>ʔə ti s-ʔub+√ʔubədiʔ by the hunters</p><p>oblique complement</p></td></tr></table>	<p>tiʔəʔ this</p> <p>direct complement</p>	<p>d-s√(h)əliʔ-du-b I/me-give(n to)</p> <p>predicate</p>	<p>ʔə ti s-ʔub+√ʔubədiʔ by the hunters</p> <p>oblique complement</p>
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Note how words are combined (i.e. *agglutinated*) from many prefixes and suffixes

My Goals

- Build respectful relationships with the Lushootseed community
 - Develop Lushootseed language skills
 - Become an active participant in the community
 - Discuss how I could responsibly conduct research that would advance the community's goals
-

My Plan

- Take a Lushootseed language course
 - Participate in several tribal community events
 - Contribute to Lushootseed on Wiktionary and Wikipedia
 - Get IRB and tribal government approval to conduct research
 - Conduct interviews with Lushootseed speakers/learners
-

What Actually Happened

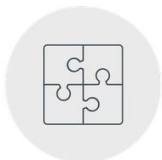
- UW Lushootseed course canceled, but I joined a tribal course
 - Went to two community events
 - Helped improve the Wiktionary coverage of Lushootseed
 - MSU IRB approval for study, still need tribal approval
-

Current Ed Tech

- Tribal websites
 - Digital keyboard
 - Quizlet
 - Now with questionable use of GPT...
 - Official online dictionary
 - Wiktionary as an alternative
-

Tribal Websites

Puyallup



BASICS



ONLINE CLASSES



CONVERSATION



LANGUAGE IN THE HOME



STORYTELLING



NATURE



COMMUNITY



HISTORY



CULTURE

Tulalip

3 Lushootseed Phrases The Tulalip Challenge



👤 Brian Berry 🕒 August 6, 2023 7:00 am 📁 Main 🏷️ Tags: dxʷləšucid, dxʷlilap, Lushootseed, Tulalip Challenge

The Tulalip Lushootseed Dept. challenges Tribal citizens and employees to start using these three (3) simple Lushootseed phrases, instead of the English ones.

We can do this!

?i čəx^w
hello

t'ig^wicid
thank you

huy?
goodbye

Digital Keyboard



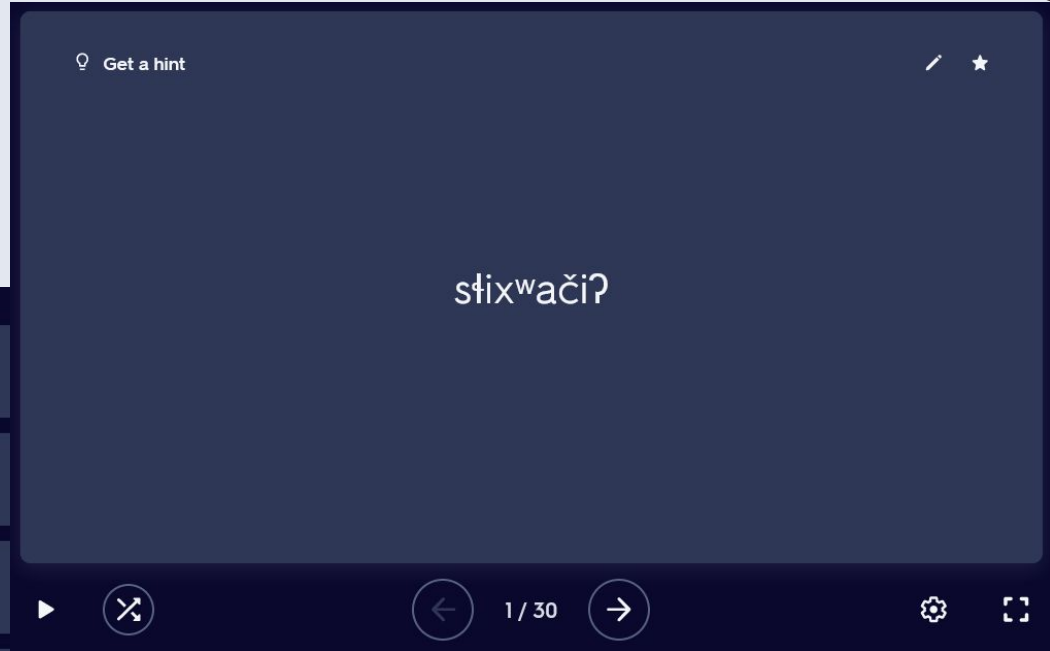
Quizlet

gʷədil		to sit
ʔitut		to sleep
tələwil		to run
x̣alad		to write

Get a hint

stixʷači?

1 / 30



Quizlet “Q-Chat”

Welcome to your language lesson! Today, we'll be learning some numbers in a Native American language. Numbers are essential for communication, whether you're counting, telling time, or shopping. In this lesson, we'll focus on numbers from 0 to 100. Don't worry if it seems challenging at first, we'll break it down step by step. Remember to pay attention to the notation after each number, as it indicates whether it's used in the Northern Lushootseed (NL) or Southern Lushootseed (SL) dialect. Let's get started!



Let's start with the term **buus**. In Lushootseed, **buus** means "4". Imagine you have four apples. If you eat one, how many apples will you have left?



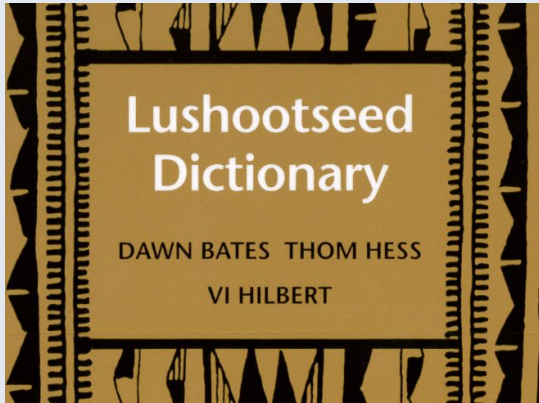
Now, here's a question to test your understanding: If you have 4 cookies and you eat 2 of them, how many cookies will you have left?

2



Great job! You'll have 2 cookies left. Keep up the good work!

Dictionary: Print & Online



Have to click “show more” to navigate “pages” of online dict.

A screenshot of an online dictionary interface. On the left, there is a vertical list of letters: '?', 'a', 'b', 'c', 'c'', 'č', 'č'', 'd', 'd'', 'ə', and 'g'. The letter 'č' is highlighted. To the right of this list is a scrollable list of words starting with 'č', including 'čál(ə)', 'čalaʔq', 'čáləs', 's-čálub', 'čáʔaʔ', 'čátələʔ', 's-čátqʔəb', 's-čətʔəb', 'čáydi', and 'čáyʔ'. At the bottom of this list, a blue button labeled 'Show More' is circled in red. To the right of the word list is a detailed entry for 'čala-d', which includes the definition '83.1 chase, follow, pursue, overtake; catch. Compare č'əd' "sneak up on, stalk", k'əč'tx' under k'əč' "track".' and several example sentences in Lushootseed with their English translations.

Wiktionary

- Freely editable
 - Potential to add examples and etymology
 - Also potential for vandalism, misinformation
- Has a search bar!
 - Low tolerance for misspellings
- Not moderated by Indigenous communities

Lushootseed [\[edit \]](#)

Etymology [\[edit \]](#)

biaw (“coyote”) + *-cut*

Pronunciation [\[edit \]](#)

IPA^(key): /biˈaw.t̪sʉt/

Verb [\[edit \]](#)

biawcut

1. [act smart](#)

Future Tools

1. Online dictionary is slow to use, no search bar
 - Wiktionary is a stopgap solution
2. Tool to decompose agglutinative words is needed
3. Online grammar resources are lacking

Maybe a new website to address all three issues?

Lushootseed Word Decomposer

- Word structure is very different from English
 - Makes using the dictionary even more difficult!
- Few resources to help people understand it
- How can tools help people decompose Lushootseed words?
 - Input Lushootseed, get a breakdown of the words

Word Decomposition Example

Type “x ^{wi} ? k ^{wi} dsəshaydx ^w ”				
x ^{wi} ?	k ^{wi}	d+	s+	(?)əs+ hay +dx ^w
Not	any	(my)+	(noun)+	(state)+ know +(patient-oriented)
<p>Definitions for haydx^w:</p> <p>háy-dx^w know, find out</p> <p>?u√háydx^wəx^w čəx^w ?u = Do you know that now?</p>				

Language Learning Apps?

- Duolingo-style apps are a bad fit for Indigenous languages
 - They remove the human relationships
 - Social transmission of culture through an app is impossible
 - Flashcard systems can be used for *memorization*
 - Spaced repetition systems are supported by memory research (Settles & Meeder, 2016)
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Takeaways

- Decolonization requires revitalizing Indigenous languages
 - Non-native scholars can help, if they make a commitment
 - Ed tech can help, when co-designed
 - “Research moves at the speed of trust”
-

References

Dawn Bates; Thom Hess; Vi taq^wšəblu Hilbert (1994), Dawn Bates, editor, Lushootseed Dictionary, University of Washington Press

Settles, B., & Meeder, B. (2016, August). A trainable spaced repetition model for language learning. In Proceedings of the 54th annual meeting of the association for computational linguistics (volume 1: long papers) (pp. 1848-1858).
