

## **Ultrasound overlay videos and their application in Indigenous language learning and revitalization**

Pronunciation is one of the major challenges in second language (L2) learning, and in the context of First Nations languages, the challenge can be compounded by both a scarcity of resources (including, in some cases, small numbers of speakers) and the pressures faced by heritage learners to preserve their ancestral language in an authentic way (1). In this paper, we discuss a pronunciation training tool we developed that uses ultrasound visualization technology and its potential application in Indigenous language revitalization.

L2 learners rely on auditory and visual information to acquire speech sounds and patterns, and tools like ultrasound that facilitate visualization of the articulatory processes involved in speech production can aid in L2 pronunciation training (2). To make ultrasound visualization accessible and interpretable to a broader audience, we developed a series of ultrasound overlay videos which combine ultrasound images of tongue movement in speech with external profile views of a speaker's head. There are 91 videos, corresponding to each sound in the International Phonetic Alphabet (see [enunciate.arts.ubc.ca](http://enunciate.arts.ubc.ca) for videos and research supporting their effectiveness).

While this video library is useful as a general resource, there has also been interest from First Nations groups in customized videos, either to target specific phonological contrasts in a given language or to present a familiar face in a particular linguistic community. Through community partnerships we are developing customized ultrasound overlay videos for four Indigenous languages: Upriver Halq'emeyem, SENĆOŦEN, Secwepemc, and Blackfoot. We report on these projects, highlighting the potential for ultrasound overlay technology to contribute to revitalization efforts in these and other First Nations languages.

- (1) Hinton & Ahlers (1999). The issue of "authenticity" in California language restoration. *Anthropology & Education Quarterly*, 30(1), 56-67.
- (2) Gick, Bernhardt, Bacsfalvi, Wilson (2008). Ultrasound imaging applications in second language acquisition. *Phonology and second language acquisition*, Benjamins: 309-22.

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