Seeing Speech:
A Pronunciation Toolkit for Indigenous Language Teaching and Learning

Heather Bliss
Sonya Bird
Strang Burton
Bryan Gick
“... Pronunciation is very, very important, because not only does it give us the indicators of what the word is, and what it means ... but it gives a full meaning of your expressions of how you feel ...” (SELILIYE Belinda Claxton, SENĆOŦEN language activist)
Objectives

- Develop multimedia pronunciation resources using ultrasound visualization technology
  - Part of a larger project investigating the utility of ultrasound in pronunciation learning across a wide range of languages
  - (e.g., Japanese, Cantonese, Mandarin, French, Spanish, German)

https://enunciate.arts.ubc.ca
Community-led partnerships in Southern BC: Customized pronunciation resources

Map credit: Royal BC Museum
Some challenging sounds in Salish languages

<table>
<thead>
<tr>
<th></th>
<th>Labial</th>
<th>Dental</th>
<th>Alveolar</th>
<th>Lateral</th>
<th>Post-alveolar</th>
<th>Velar</th>
<th>Uvular</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stops</strong></td>
<td>p  p̓</td>
<td>t  t̓</td>
<td></td>
<td></td>
<td></td>
<td>(k)</td>
<td>q  q̓</td>
<td>ʔ</td>
</tr>
<tr>
<td><strong>Affricates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>tθ</td>
<td>ts</td>
<td>ɬ</td>
<td>č̣č̣č̣č̣</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fricatives</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>h</td>
</tr>
<tr>
<td></td>
<td>θ</td>
<td>S</td>
<td>ɭ</td>
<td>ṣ̌ṣ̌ṣ̌ṣ̌</td>
<td>x  x̣x̣x̣x̣</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nasals</strong></td>
<td>m  m̓</td>
<td>n  n̓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>η̣η̣η̣η̣</td>
<td></td>
</tr>
<tr>
<td><strong>Resonants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>l̓l̓</td>
<td>j̓j̓j̓j̓</td>
<td>w  w̓w̓</td>
</tr>
</tbody>
</table>
Video production:
SENĆOŦEN

Photo credit: UBC Communications
Video production: Halq’emeylem

Photo credit: C. McKenna, APTN
Video production:
Secwepemc
Sample overlay videos: SENĆOTEN

(mouse over video and hit PLAY)
Sample overlay videos: SENĆOŦEN

(mouse over video and hit PLAY)
Sample overlay videos: Halq’emeylem

(mouse over video and hit PLAY)
Sample overlay videos: Secwepemc

(mouse over video and hit PLAY)
Evaluating the effectiveness of the videos

The videos work!

- e.g. Cantonese, Bliss et al, 2016

Students improved vowel production with video training, but not with audio training or no training.
Impacts

Video credit: UBC Communications
Acknowledgements

• Elders & L1 speakers: Lou Claxton, Emmeline Felix, Elizabeth Phillips
• Apprentices: Ashlee Cooper, Nick Henry, Tiffany Joseph, Katia Olsen
• Youth helpers: Khloe, Urijah, Phoenix
• Facilitators: Tye Swallow, Rosalind Williams, Christine Schreyer
• Recording assistance: Aaron Leon, Matthew Law
• Production assistance: Murray Schellenberg, Chantelle Parra, Yik Tung Wong
• Financial support: NIH Grant (DC-02717) to Haskins Laboratories, UBC Teaching and Learning Enhancement Fund, Banting Fellowship to H. Bliss, UVic IRG to Sonya Bird