

Ultrasound-integrated Pronunciation Tutorials



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June 18, Thursday
at the 35th Annual Society for Teaching and Learning in Higher Education.
Achieving Harmony: Tuning into Practice
Westin Bayshore hotel, Vancouver

Round Table Discussion 32.
1:45 pm–2:05 pm Roundtable Discussions – Round 1 (20 mins.)
2:25 pm–2:45 pm Roundtable Discussions – Round 2 (20 mins.)



Collaboration of Linguistics and Japanese program

“Multimodal approaches to the empowerment of pronunciation teaching and learning: Creating online interactive tutorial videos” (PI: Bryan Gick)

ARTICULATORY
PHONETICS
[Linguistics]

eNunciate
(Visible Speech
Project)

TEACHING
LANGUAGE
[Japanese
program]

Speech Ultrasound to
visualize speech

Teaching pronunciation
is difficult, due to lack of
time, method, materials



Goals of the presentation:

- To show how phonetics/phonology (how science of linguistic sounds) is tuned into practice in our project.
- To inspire the educational development of pronunciation teaching

You will

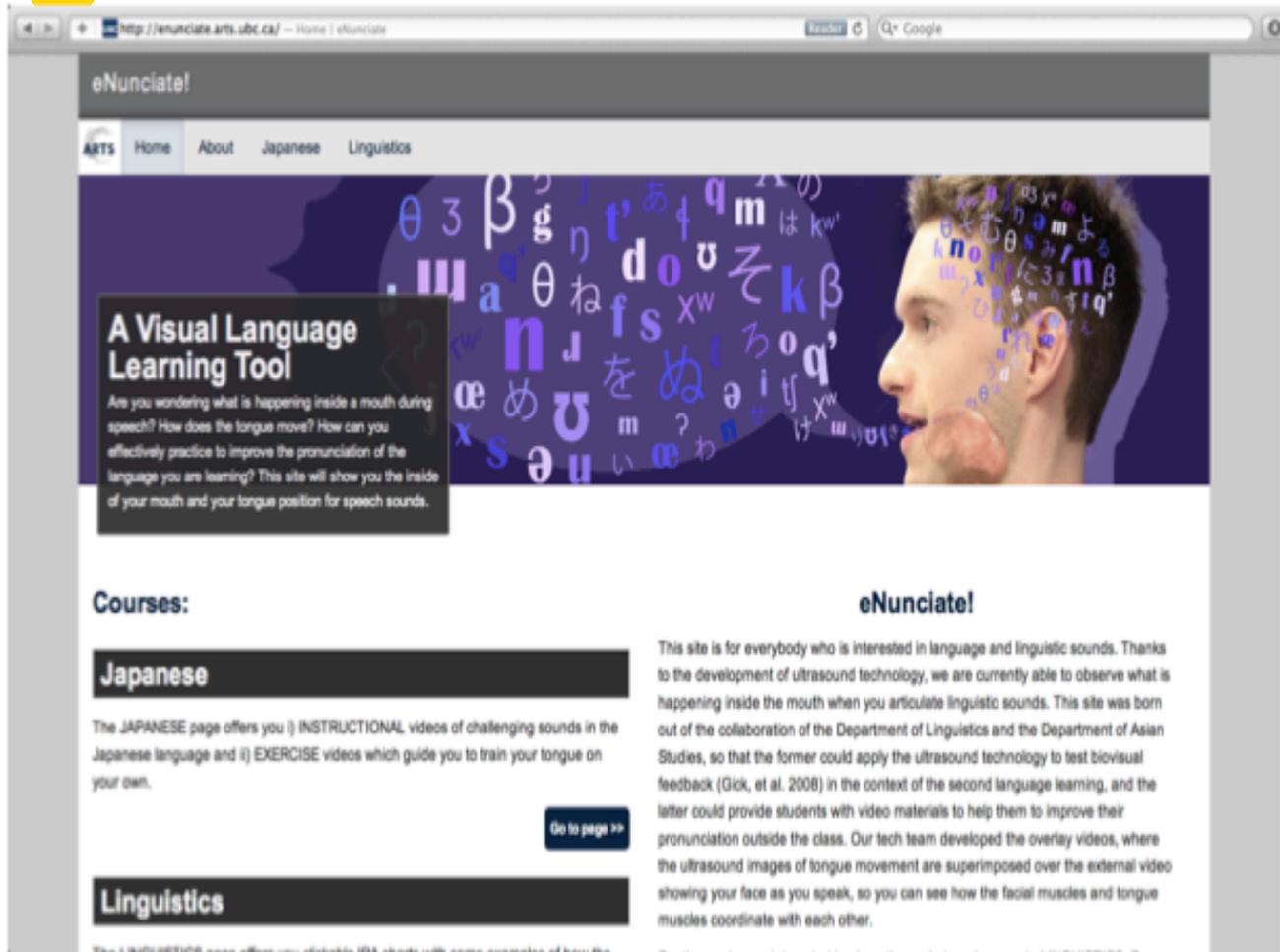
- get the experience that students had in Japanese class
- discuss the value of the pronunciation education for the further direction

1

eNunciate (website, open to public)

- Go to <http://enunciate.arts.ubc.ca/>

eNunciate (open to public)



The screenshot shows the eNunciate website in a browser window. The address bar displays 'http://enunciate.arts.ubc.ca/'. The page title is 'eNunciate!'. The navigation menu includes 'Home', 'About', 'Japanese', and 'Linguistics'. The main banner features a man's profile with various phonetic symbols overlaid on his face and head. A text box on the left reads: 'A Visual Language Learning Tool. Are you wondering what is happening inside a mouth during speech? How does the tongue move? How can you effectively practice to improve the pronunciation of the language you are learning? This site will show you the inside of your mouth and your tongue position for speech sounds.' Below the banner, there are sections for 'Courses:' with sub-sections for 'Japanese' and 'Linguistics'. The 'Japanese' section includes a 'Go to page >>' button. The 'Linguistics' section has a brief description of the site's purpose and technology.

- Home
- About
- Japanese
- Linguistics

eNunciate (site, open to public)



Japanese site

http://enunciate.arts.ubc.ca/japanese/introduction/ — Introduction | eNunciate

Japanese Introduction

Welcome to Japanese Pronunciation Page!

Welcome to eNunciate! Japanese pronunciation page! This website lets you practice, independently, the challenging sounds of Japanese. It helps you understand how native Japanese speakers generate those sounds by providing you with images of the actual tongue positions and movements. You can start with the introduction videos in "46 Sounds of Japanese" section.

- Introduction
- 46 Sounds of Japanese
- Introduction to Phonetics
- Challenging Sounds
 - ら、り、る
 - つ vs ず
 - りゃ、りゅ、りょ
 - し vs ずい
 - ざ vs じゃ
 - つ vs ちゅ
- Let's Test Yourself
 - Find Your Challenging Sounds!
 - Prove Yourself (Sounds!)

Department of Linguistics
Totem Field Studios (Main Department)
2013 West Mall
Vancouver, BC Canada V6T 1Z4

- Introduction
- Challenging Sounds (production lessons)
- Let's Test Yourself (perception test)

eNunciate (site, open to public)



Challenging Sounds

Home / Japanese / Challenging Sounds / ら、り、る

Japanese

- Introduction
- 46 Sounds of Japanese
- Introduction to Phonetics
- Challenging Sounds**
 - ら、り、る**
 - つ vs っ
 - りゃ、りゅ、りょ
 - し vs っし
 - じ vs じゃ
 - っ vs っゃ
- Let's Test Yourself
 - Find Your Challenging Sounds!
 - Prove Yourself (Sounds)!

Department of Linguistics
Totem Field Studios (Main Department)

- Voiced vs. voiceless
- **ra, ri, ru**
- tsu vs. su
- rya, ryu, ryo
- shi vs. si
- za vs. zya
- tsu vs. chu

eNunciate (site, open to public)



ra, ri, ru

The screenshot shows a web browser window with the URL <http://enunciate.arts.ubc.ca/japanese/lets-practice/raru/>. The page has a navigation menu on the left with categories like 'Introduction', '46 Sounds of Japanese', 'Introduction to Phonetics', 'Challenging Sounds', and 'Let's Test Yourself'. The 'Challenging Sounds' section is expanded to show 'ら、り、る' selected. The main content area has tabs for 'Instructions', 'Practice', and 'Quiz'. Below the tabs, there are two video players. The first is titled 'Exercise Video 1 of ら、り、る' and shows a diagram of the tongue touching the alveolar ridge with the text 'RARIRURERO' and 'Make sure your tongue is touching the alveolar ridge.' The second is titled 'Exercise Video 2 of ら、り、る' and shows a cartoon character saying 'ありがとう Arigatoo Thank you!'.

- Instructional video
- Exercise videos
- Perception test



● Use of ultrasound in linguistics

● L2 pronunciation (applied linguistics)

- English [r][l] for Japanese speakers (Gick *et al.*, 2008)
- French [y][u] for Japanese speakers (Pillot-Loiseau *et al.*, 2013)

● Speech therapy (clinical linguistics)

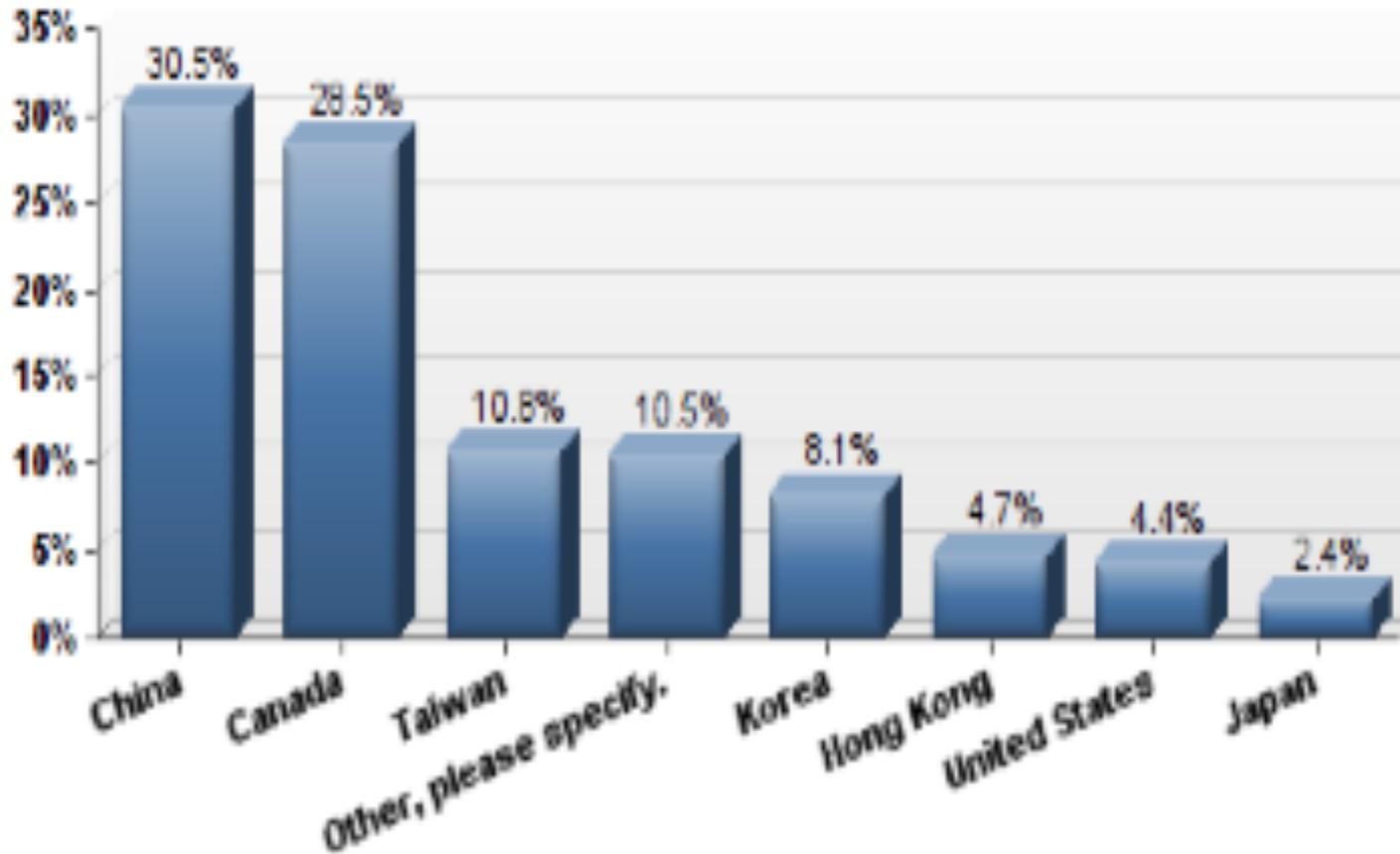
- Adults with hearing impairment (Bernhardt *et al.*, 2003)

● Documentation of endangered/understudied languages (field/anthropological linguistics)

(Gick 2002)



35.3% of Japanese program in UBC are international students. Bilinguals are 47%, and multilinguals are 40.1%. The top three native tongues are: 1 Chinese, 2 English, 3 Korean. The interference of students' L1 was considered for the instructional videos.

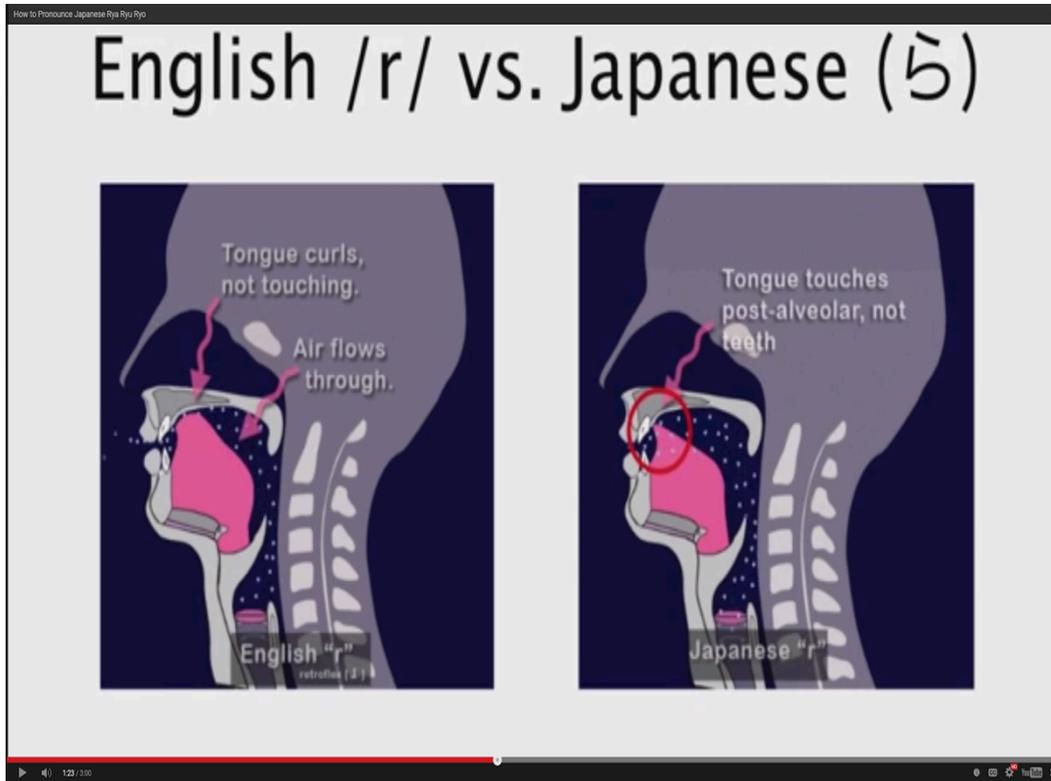


2

Technology

Animation and Ultrasound Overlay

1. Animation <http://blogs.ubc.ca/visiblespeechproject/>



Bubble shows the stream of air flow.

The hand drawn animation was made in Flash.
It took several hours for each animation.

2. Ultrasound Overlay



Double-simultaneous recording

Advanced editing in Adobe After Effects

Overlay

Each finished video was posted on eNunciate site, together with a compendium of links to related content.

3

Pilot Implementation

RARIRU



Activity 1 based on the contents of videos

1. Video watching (assignment)

- "Introduction to Phonetics 1, 2"
- "RARIRU for English speakers"



2. Grouping

Form a group of 3-4. Try to find someone whose first language is different from yours.



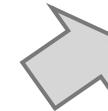
3. Pronunciation check

Instructor gives them a list of words and sentences. Students read it aloud.



4. Feedback

If you find a group mate's "RARIRU" is not correct, give advice from what you learned from the video.



5. Discussion

If nobody in your group is incorrect, then discuss how you could teach RARIRU to someone who cannot articulate RARIRU correctly.



Watch RARIRU video

<http://enunciate.arts.ubc.ca/japanese/lets-practice/rariru/>

Watch RaRiRu video

Video: 3:18min



Read them aloud. Check your pronunciation with your neighbor

ramen 'ramen noodle'

arigatoo 'Thank you'



Explain the difference between English R and Japanese R. (3 min)

The answers we want to hear here is:

For Japanese Ra, the tip of the tongue is [...].
It touches [...].



Activity 2 based on the contents of videos

1. Video watching (assignment)

- "Introduction to Phonetics 1, 2"
- "RARIRU for English speakers"



2. Perception Quizzes

Students hear correct and wrong pronunciation and answer which one is correct.



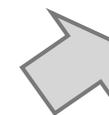
3. L1 interference

Instructor talks about typical L1 bias according to L1.



4. Understanding check

An instructor give them a list of graphics of several tongue shapes, and asks them which shape represents Japanese /r/.



5. Ultrasound demo

A student volunteer comes to the front, records the pronunciation of /r/ sound with ultrasound imagings. The instructor compares ultrasound imagings of Japanese /r/ and English /r/ and discusses the difference.

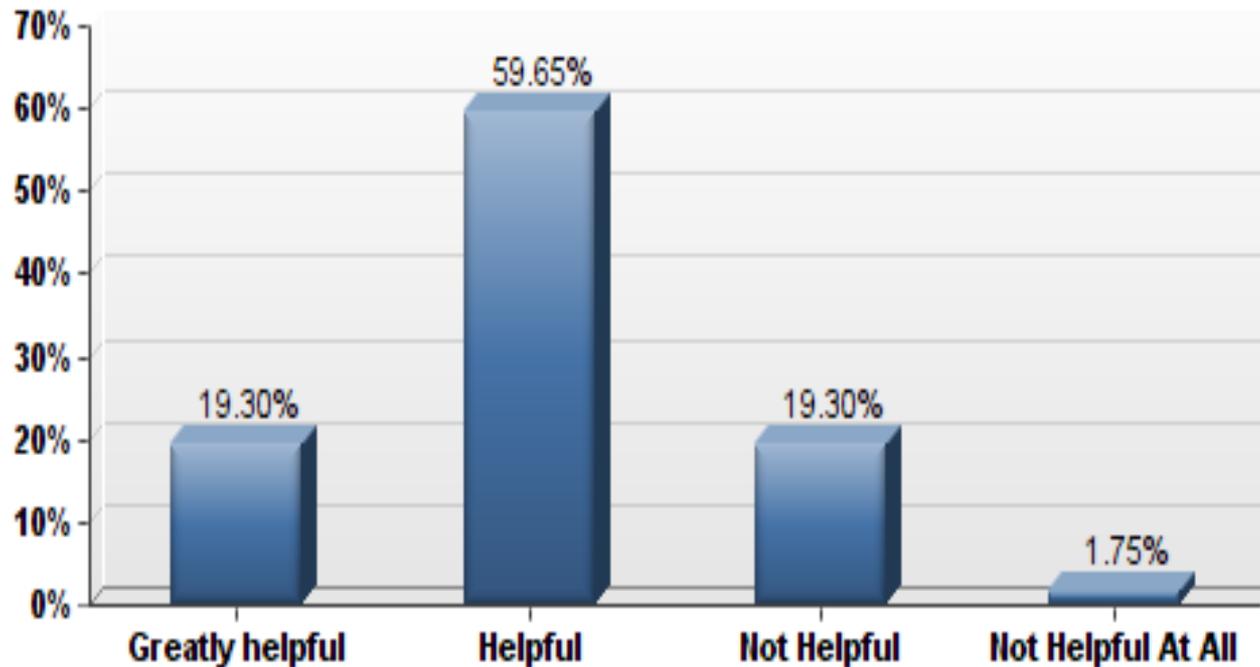


Comments about autonomous learning outside class

- We only have 4 hours of class each week, and **I don't think that is enough time to learn a new language.**
- **It's hard to practice Japanese speaking in class** because we have limited time.
- By providing resources for learning pronunciation outside of the classroom, **it really helps the students to learn Japanese and work towards fluency.**
- **Having a reference... was very nice.**
- **Can always go back to it** whereas in class, we would only be able to see it once.

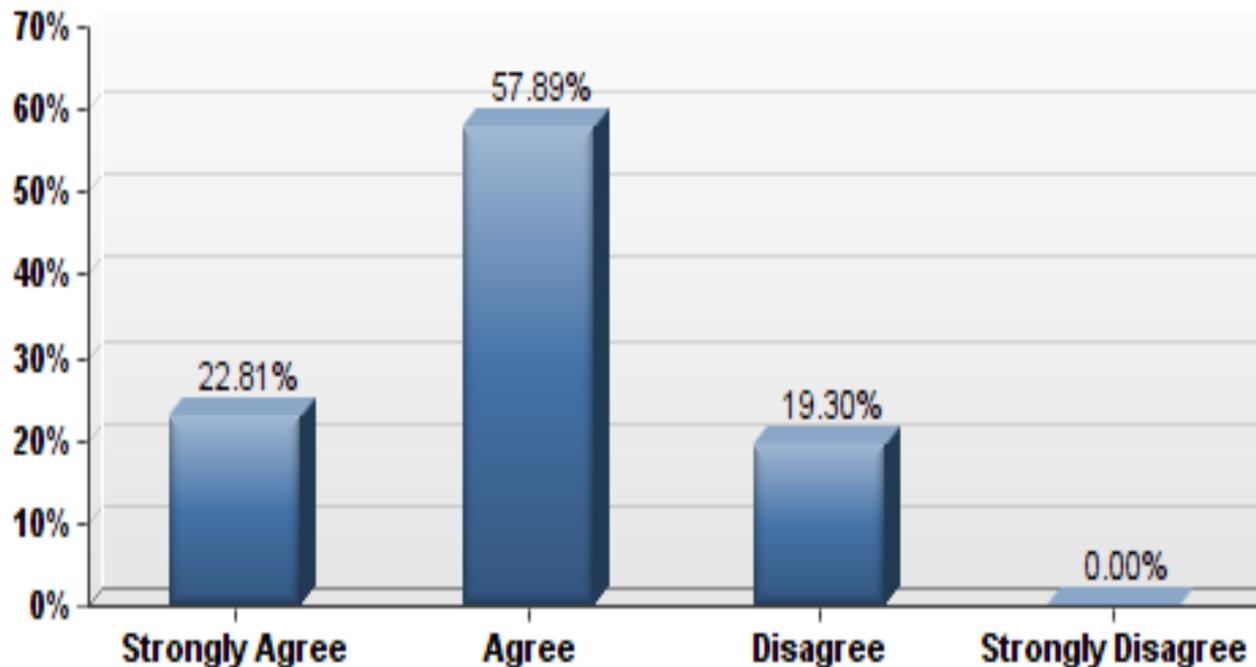
Student Survey

Q. The instructional video “Japanese RARIRU for English speakers” helped you **identify problems** in your pronunciation. (n=57)



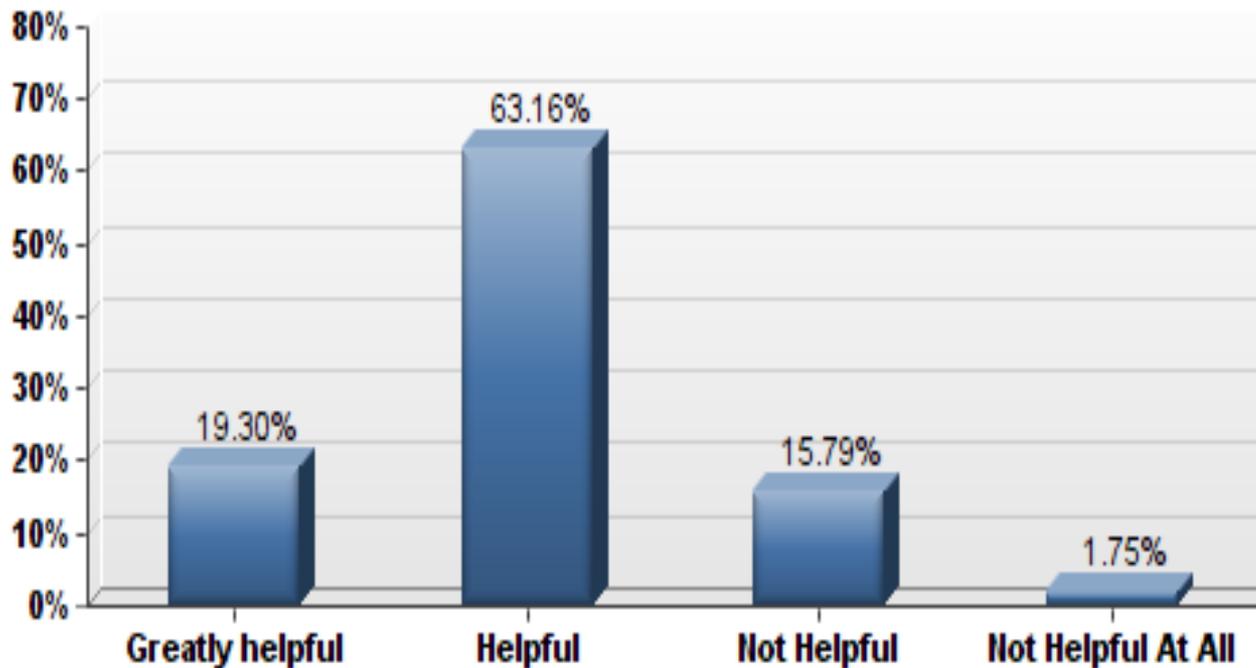
Student Survey

Q. **Ultrasound overlay** of the side face of a person in the instructional video “Japanese RARIRU for English speakers” helped you **understand how to pronounce** challenging Japanese sounds and words. (n=57)



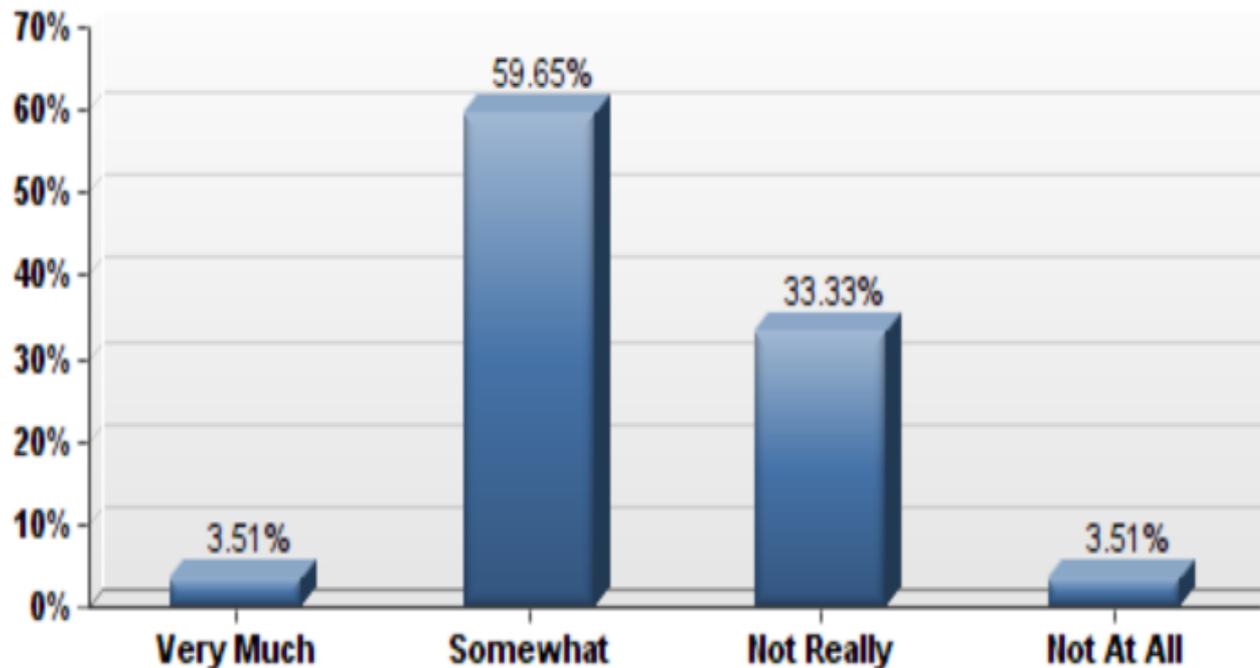
Student Survey

Q. The instructional video “Japanese RARIRU for English speakers” helped you **achieve the correct Japanese pronunciation**.(n=57)



Student Survey

Q. After watching the videos on the eNunciate! website, how much do you think your pronunciation has improved? (n=57)





Comments about in-class activity

- Pronunciation needs lots of independent practice and **it's easy to think your pronunciation is good** when everyone is talking/pronouncing at the same time.
- **We are able to get instant feedback from other classmates** and ensure that our pronunciation is correct.
- **It was good to receive pronunciation feedback from the instructor during in-class activities.**
- **It was fun** working in a group trying to figure out how to teach somebody Japanese pronunciation because **I was able to get feedback on my ideas and gather other ideas.**



Comments about the connection between autonomous learning and in-class activity

- It was good way to review what we did at home together.
- It was good reinforcement and allowed processing of the materials learned outside of class so that there was no feeling of having learned in isolation of the rest of the course.
- It reiterates material, which helps with clarification.



What did you think about our videos?
Any suggestions?



Thanks!

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If you have further questions, please contact Noriko Yamane
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References

- Bernhardt, B. Gick, B., Bacsfalvi, P. & Ashdown, J. 2003. Speech habilitation of hard of hearing adolescents using electropalatography and ultrasound as evaluated by trained listeners. *Clinical Linguistics and Phonetics*, 17, 3, 199-216.
- Gick, B. [The use of ultrasound for linguistic phonetic fieldwork](#). *Journal of the International Phonetic Association*, 32, 113–122. 2002.
- Gick, B., Bernhardt, B., Bacsfalvi, P., & Wilson, I. (2008). Ultrasound imaging applications in second language acquisition. In J. G. H. Edwards and M. L. Zampini (eds.), *Phonology and Second Language Acquisition* (pp. 309-322). Amsterdam, The Netherlands: John Benjamins.
- Pillot-Loiseau, C., Antolík, T. & T. Kamiyama. 2013. Contribution of ultrasound visualisation to improving the production of the French /y/-/u/ contrast by four Japanese learners. PPLC13: Phonetics, phonology, languages in contact Contact: varieties, multilingualism, second language learning, Aug 2013, Paris, France.
- Toda, T. (2003). *Second Language Speech Perception and Production: Acquisition of Phonological Contrasts in Japanese*. Lanham, Maryland: University Press of America.

