

**Materials Development: Harnessing Technology to Enhance Perception-Based Instruction of Pronunciation**

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Abstract

This paper outlines how the author combined traditional activities for teaching pronunciation with the computer camera function to implement perception-based pronunciation instruction. It begins by considering some broad aims and methods of teaching pronunciation, as well as relevant language teaching theory influencing pronunciation instruction. It goes on to describe how the project came about, then introduce and analyse the materials used in the project. Perspectives of students from three Freshman English groups are discussed, followed by a set of considerations and recommendations for similar approaches that will enable teachers to bring together technology and approaches to teaching pronunciation in future.

## **Landscape of Teaching Pronunciation**

### **Aims of Teaching Pronunciation**

Levis (2005) describes two issues related to teaching pronunciation. The first is nativeness, whereby the goal is to achieve speech that is indistinguishable from that of a native speaker. However, this poses a fundamental problem. While many students may have a strong desire to sound similar to a native speaker of a language, there is an inherent problem with the term nativeness. It suggests that native speakers of English represent the only valid pronunciation goal, biased towards the native-speakerism. This perpetuates the native speaker fallacy as proposed by Phillipson (1992). The native speaker fallacy refers to misguided notion of assuming the best teachers of a language, are native speakers of any particular L2. Furthermore, Morley (1991), also argues that nativelike speech is something that will, for the majority of students, remain an unattainable goal. Despite Morley's argument, although producing certain L2 sounds may remain difficult for some learners after a certain age, it is still highly beneficial to raise students' awareness of phonological difficulties in L2.

The second issue Levis (2005) posits is principled by intelligibility. This places the goal on intelligible speech, "irrespective of how native-like it sounds" (Derwing and Munro, 2015, p. 6). Intelligibility gained popularity with the advent of Communicative Language Teaching and empirical evidence on the native-speakerism fallacy. When intelligibility is set as the goal, the aim is to produce sounds that are 'close enough' (Kenworthy, 1988, p. 13) to the intended sound in the foreign language.

Morley (1991) suggests that in addition to intelligibility, there are two more goals. Teaching of pronunciation should also aim for communicability and increased self-confidence. Without a doubt, it is important for students to be intelligible. However, the materials presented in this project are not only concerned with improving students' intelligibility of three specific aspects of pronunciation, but they are also primarily concerned with improving students' perception of sounds. Moreover, the goal of the approach set out in this paper is not focussed on achieving native-like speech. Therefore, they are closely related to Morley's goal of increased confidence.

### **Methods of Teaching Pronunciation**

The above section has set out the aims of teaching pronunciation, but how might these goals be achieved? According to Kelly (2000), "there are two key sides to teaching

pronunciation - namely, the teaching of productive skills on the one hand and the teaching of receptive skills on the other” (p. 15). But why is it necessary to separate these two skills? According to Flege’s Speech Learning Model, learners must first be able to make a distinction between sounds in the L2 and sounds in the L1 before they are able to produce sounds with accuracy (Lee et al., 2020).

There is a growing body of research on the importance perceptive skills have on learners’ production. Perception-based instruction refers to activities that teach students to discriminate between sounds, while production-based instruction refers to tasks that require students to produce the target sound. Lee et al. (2000) researched the effect of perception-based instruction compared with production-based instruction with a group of 115 Japanese students at the tertiary level. Their research showed that perception-based instruction can, indirectly, result in improved production skills. It follows therefore that teachers must give learners ample opportunity to hear, and discriminate, different sounds.

Low (2016) acknowledges the important role that pronunciation has in English as an International Language, yet also unfortunately, points out that pronunciation remains a “marginalised skill” (p. 1). If this is the case, what can be done to counter this? Derwing and Munro (2015) argue there needs to be at least some time each lesson for a predetermined pronunciation task and also error correction feedback on aspects of pronunciation. Based on perception-based instruction of pronunciation theory, this project sets out a series of pre-planned activities. The technique employed for the activities, could also be used ad-hoc for corrective purposes.

## **Combining Pronunciation and Technology**

### **Minimal Pairs**

The first aspect with which the project is concerned is the teaching of segmental aspects of pronunciation of minimal pairs. Derwing and Munro (2015) point out that minimal pair activities and drilling were popular pronunciation tasks in post-war Audiolingual classrooms. At this time, the goal was placed on oral skills. It was believed that learners could simply listen and repeat to imitate the speech of a native speaker. This is probably best illustrated with the books in the series, *Ship or Sheep* first published in 1971. However, as Communicative Language Teaching became popular, these types of activities became less popular. Derwing and Munro suggest pronunciation instruction began to be downplayed. It

was felt that pronunciation was “un-teachable and that learners would acquire whatever skills they needed through simple exposure to the L2” (2015, p. 22).

Most four skill textbooks for the communicative classroom do include explicit pronunciation activities. It is less common however for these textbooks to include guidance on aspects such as the shape of the mouth and position of the tongue in relation to pronunciation features. It seems that features such as these were more common in older textbooks. An exception to this is the series *Innovations 2006* published by Heinle ELT. The reference section at the back of the textbook includes photographs of the shape of the mouth when producing vowels and consonants. This provides learners with a clear visual image of what shape they must try to imitate. Moreover, it raises their auditory and articulatory awareness. Low (2016) proposes that both the teaching and learning of pronunciation requires knowledge of how exactly sounds are produced. Freshman English students in this project use the following textbooks *Four Corners 1* (Cambridge University Press) and *TOEIC Skills 1* (abax publishing). Whilst both textbooks are popular in Japan, neither textbook has activities aimed at practising minimal pairs, articulatory diagrams, photographs showing the shape of the mouth or activities to improve perception of sounds.

## **Technology**

The second aspect with which the project is concerned is the teaching of pronunciation through the use of technology. There are many examples of how multimedia can be used in the instruction of pronunciation practice. Low (2016) suggests three examples, first the use of songs, then software applications, and lastly “tapping into the advances of mobile technologies” (p. 150). Král’ová et al (2021) suggest that computerised visualisation of speech can be effective in helping learners to understand and improve their pronunciation. They argue that sophisticated speech analysis software only used to be available in specialised language departments. Today, however, speech analysis software is readily accessible on PCs and mobile devices allowing teachers and learners to study speech samples in terms of pronunciation.

Technology and pronunciation instruction can be further linked. An effective way to teach learners about articulation through perception-based instruction is to have students observe the shape of the mouth on a large TV screen. This is a simple, yet novel and effective approach of modelling articulatory movements for certain problematic sounds. It is similar to the idea proposed by Yoshida (2016, as cited in Král’ová et al., 2021) of having learners use

mirrors to observe the shape of the lips when making certain sounds. Derwing and Munro (2015) also propose “mirroring the exact imitation of speech and body movements” (p. 106) as a classroom activity. These techniques can be taken one step further by using the large TV or overhead projector screen in the classroom. This provides a whole-class model of the articulatory process. It not only allows learners to hear the sounds through a loudspeaker, but more importantly, they can observe the shape of the lips for each sound.

### **How the Project Began**

Due to Coronavirus, all Asia University classes were conducted remotely for the entire academic year 2020-2021. During this time, I taught my classes remotely using Zoom. Whilst using this platform, I made the following observation: during pronunciation activities showing the shape of the mouth, students seemed to be more engaged and motivated than if I were doing the same activity in the classroom. I realised that perhaps since all students could see the teacher’s face and mouth on their own personal screen, it created a more motivating and engaging dynamic with students seeming to concentrate more. I started to exploit the use of the camera on Zoom to show how to articulate certain sounds, focussing specifically on the shape of the mouth and lips.

### **Implementation in the Classroom**

In April 2022, classes returned to face-to-face and teachers returned to their traditional classroom management techniques and activities, albeit with social distancing measures in place. An approach that I wanted to carry over from my experience of teaching on Zoom the previous two years was the use of the camera and how it could be used to harness perception-based pronunciation instruction in the classroom. A way to do this would be to connect my laptop computer to the TV in my classroom. I could then open the camera app on the computer and display the camera on the big TV screen. This would enable me to replicate what the Zoom screen looked like for students studying remotely, except they were all present in the classroom.

During the semester, I used this method to draw students’ attention to pronunciation feedback. For example, I found it was an effective way to show students the difference between the /th/ and /z/ sound present in the words “this” and “zip”. During the semester, I used the large TV screen to provide whole class feedback on pronunciation. In addition, at the end of the semester, all my Freshman English classes undertook a fifty-minute stand-

alone pronunciation class using specifically developed materials. Three Freshman English groups took part in the study. Students' levels ranged from A1 to A2 on the Common European Framework for Languages.

### Summary of the Materials

This section details the stand-alone class materials produced for the class at the end of the semester (Appendix 1). While the materials were developed for a stand-alone class, the technique of using the large TV screen or an overhead project could be employed in any lesson for on-the-spot pronunciation instruction. Four aspects were incorporated into the class materials: first, a photograph showing the shape of the lips for the target sound; second, the target sound and corresponding phonetic symbol; third an articulatory diagram showing the cross section of the mouth and tongue position; and lastly, the list of minimal pairs containing the target sound.

Kenworthy (1987) discusses the problems learners of different languages have with English pronunciation, "some problems learners have need to be given *high priority* because they are vital for intelligibility; others do not affect intelligibility and can be given *low priority*" (p. 123). She suggests that high priority be given to the sounds in activity 1 and 2 in Table 1, /θ/ and /ð/, when they appear in the final position of the word, such as 'soothe' and 'south'. In addition, high priority should be given to the confusion between /l/ and /r/. Low priority is given to /θ/ and /ð/ when they appear in the initial position of a word such as 'this' and 'think'. Despite this, /θ/ and /ð/ in the initial position, frequently appear in the target language at pre-intermediate level, such as 'this', 'these', 'that', 'those', 'they', therefore I feel focussing on these sounds in the initial position is beneficial for the particular learners in this study. By addressing /θ/ and /ð/, in both initial and final position, it is possible to target a highly occurring sound, thus having a wide impact on learners' sound production.

**Table 1.**  
*Activity Breakdown*

	Target Sound	Anticipated Problem with Target Sound
Activity 1	Fricative dental consonant /θ/	Often confused with /s/
Activity 2	Fricative dental consonant /ð/	Often confused with /z/

Activity 3	Approximant alveolar /l/	Often confused with /r/
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Table 2 details the aims and stages of the procedure. The same procedure was followed for each activity. Students were placed into groups of three and worked with the same students for all activities. Each activity was printed and laminated on A3 paper to make an attractive poster-type handout for each group. A PDF version of the laminated posters were shared with students later.

**Table 2.**  
*Activity Stages, Aims and Procedure*

Stage	Aim of Stage	Procedure
Stage 1 <i>Introduction to Activity</i>	-To allow students time to check the vocabulary and for the teacher to gloss meaning of new words if necessary.	-Hand out Activity 1 laminated poster. -Instruct students to check any new vocabulary, explaining meaning if necessary.
Stage 2 <i>Listening</i>	-To allow the students to simply hear the pronunciation of the words.  -To draw students' attention to the use of the TV screen.	-Read the words on the laminated poster instructing the students to look at the TV screen as they are read.
Stage 3 <i>Discriminating</i>	-To allow students a chance to distinguish between the target sounds in the activity.  -To model the activity for the next stage.	-Instruct students to focus on the TV screen and to pay attention to the shape of the mouth and then decide which word was said instruct students to listen and watch.  -Read one word for each line students confer together and then point to the word they think they heard teacher monitors and checks the choice made by each group  -Indicate which is the correct word teacher then repeats both words in the line again whilst study the shape of the mouth

		repeat this stage for all the words on the poster.
Stage 4 <i>Production</i>	-To give students more receptive listening practice  -To allow students to produce the target sound	-Nominates a student from each group to act as the teacher.  -Nominated student reads one word from each line, while the other two students listen and decide which word was said -Teacher monitors. -Allow all students in the group to act as teacher.
Repeat stages 1-4 above for all three activities		
Stage 5 <i>Reflection</i>	-To allow students to reflect on the lesson	-Display the following questions on the board, and students are invited to respond in English or Japanese. <ol style="list-style-type: none"> <li>1. Did you enjoy the activities? Why?/Why not?</li> <li>2. Which activity was most difficult? Why?</li> <li>3. Do you think your pronunciation has improved after doing these activities? Why?/Why not?</li> </ol>

After finishing activity 1 and 2, attention was drawn to the articulatory difference between /ð/ and /θ/. This can be done by focussing students on the two diagrams for each sound and eliciting the difference; the difference being that /ð/ is voiced, which creates a slight vibration in the throat. After this distinction between the diagrams is established, students are instructed to place their hands on their throats, to feel the difference in movement between the two sounds.

#### **Analysis of Materials**

During the lesson, I took notes about students' reactions and level of engagement. Salient points included that it was positive to see that students seemed very engaged with the activity, which I feel was helped using A3 laminated poster-style handouts. Also, students who were normally quiet seemed to participate more actively, suggesting that they felt more confident. It is entirely possible that these observations were because the lesson felt novel compared to a regular class.

Another observation was that some students needed reminding to look at the television screen whilst they listened to the words being read aloud. It seems that some learners preferred to look at the written form before checking the screen. With careful

monitoring and repetition of the words, all students had a chance to see the screen. I feel this was a pitfall with the procedure, rather than with the materials. A solution to this would be to first do the activity as a reading activity, without the distraction of the TV screen. The teacher reads the words from each line and the students simply choose the word they hear. This could then be followed with the same activity, but with the students focussing on the TV screen, essentially a listening approach.

There was one major hindrance to stage four in the procedure. Since all the students were wearing facemasks, it was not possible for the other students in the group to observe the shape of the mouth of the speaker. Despite this, it was still possible for the student nominated as teacher, to have the chance to make the sound whilst paying careful attention to the shape of their mouth. The procedure could be improved by including an extra stage between stage three and four. Students could use the camera function on their smartphones to observe the shape of their own mouth whilst producing the target sounds. However, since the use of face coverings is still recommended, this is not currently feasible.

A notable drawback to the materials and activities is the fact they are deductive in nature, in that they do not allow students to make general observations for themselves. Instead, the rules are presented in a deductive manner. In this case, the use of the photograph, phonetic symbol, articulatory diagram, and list of words presented all together means that the students are given the rules, rather than having to form generalisations. An advantage to this, however, is that more time can be spent on receptive work.

These materials draw on traditional minimal pair work, such as the vowel sound variation between the words ship and sheep, common to post-war English instruction. However, they are not aimed at developing productive skills with outdated drilling. Instead, they are designed to give learners perception training at discriminating sounds, whilst also providing an accurate articulatory model. In addition, the materials and procedure are not designed for individual student work, rather they actively promote group work by encouraging peer-peer counselling of discrimination activities. The combination of traditional audio-lingual materials, visuals showing the shape of the mouth/tongue, and the incorporation of technology with the large TV screen produces an effective approach to perception-based pronunciation.

### Data Collection

After the lesson, students were invited to express their interest in participating in the study. Interested students were given the consent form printed on A4 paper (Appendix 2) and they were also shown the questionnaire on the large TV screen (Appendix 3). This meant they could see the type of questions in the survey, and therefore knew exactly the process would entail, before committing to participating. They were instructed to read the consent form after class, and should they wish to participate, were told to bring back the forms in the following class. This way, participants were given time to read the consent forms by themselves which avoided them feeling pressured to participate. Students who brought back the questionnaire in the subsequent lesson were invited to ask any questions about the study and then signed the consent form in the presence of the teacher. Participating students were then given a Google Form QR code, with which they could complete the questionnaire. The questions were written in English and Japanese.

The questionnaire consisted of six short statements and a Likert scale for each statement to indicate level of agreement. The Likert statements were made mandatory. Each statement included a follow-up question in order for students to expand their answers. However, follow-up questions were not made mandatory, to do so, might have elicited less useful responses because participants could have felt obliged to respond. I also felt that allowing students to decide whether or not to respond would give more insightful data.

**Table 3.**  
*Number of Students in the Study*

Faculty (total number of students per class)	Business (20)	Law (18)	Business Hospitality (19)
Number of students who attended the stand-alone pronunciation class	12	13	13
Number of students who expressed an interest in participating	6	5	10
Number of students who completed the questionnaire	4	5	9
Total completed questionnaires	18/21		

## The Results

**Table 4.**  
*Statement Survey Results*

	1 strongly agree	2 agree	3 neither agree nor disagree	4 disagree	5 strongly disagree
The pronunciation activities that focus on the shape of the mouth were helpful for me.	12	4	2	0	0
Seeing the teacher's mouth on the big TV screen made it easy to understand the pronunciation.	14	2	2	0	0
Before doing this type of activity, I did not really know about how the shape of the mouth can affect pronunciation in English.	5	3	5	4	1
I think my pronunciation has improved thanks to the activities that show the shape of the mouth on the big TV screen.	8	8	2	0	0
I enjoyed doing these types of activities.	14	3	1	0	0
I would like to do more of these types of pronunciation activities next semester.	10	8	0	0	0

### Analysis of Results

Considering the first statement, it is positive to see that the majority of students, sixteen responses, felt that this type of activity was useful. It seems that the visual stimulus of the TV screen was effective. One participant said that it was helpful because they had an image for it [the pronunciation]. Another participant said that it was helpful because unless you see the differences, it is not possible to know about the pronunciation. Still another participant wrote that they had become more conscious of pronunciation. It was also positive that no students indicated that they were not useful. In response to the follow-up question about why they were particularly useful, responses included the following:

**Table 5.**  
*First Statement - Follow up Question Responses*

<b>The pronunciation activities that focus on the shape of the mouth were helpful for me. (3 is neither agree nor disagree). If you agree, why were they helpful?</b>	
<b>Original response</b>	<b>Translated/rephrased response</b>
発音正しかなかった	got the pronunciation right
私は夏休み中にスピーキングとリスニングを強化したいと思っていたので勉強になりました。	I wanted to improve my speaking and listening skills during the summer vacation, so I learned a lot.
Because I could understand phonation of difficult english words.	
英語に興味を持てた	interested in English
発音の仕方に役立った	Helped me with pronunciation
発音の違いがよりわかりやすくなったから	Because the difference in pronunciation is easier to understand
発音を意識することによって理解しやすくなったから	Because it became easier to understand by being conscious of pronunciation
発音するのにイメージがもてた	I had an image for how to pronounce it
聞こえ方に差があることがわかった	I found out that there is a difference between some sounds
口形に焦点を当てた発音活動をしたことがなかったため、役に立った	It was useful because I had never done pronunciation activities that focused on mouth shapes.

The teacher taught me how to pronounce in detail, and it was easy to understand how to do it.	
正しい発音を学ぶことができた	I learned the correct pronunciation
It's because I study TOEIC TEST and English conversation.	
実際に見ないと分からないことだから	Because you can't know unless you actually see it

Regarding the second statement, whether seeing the teacher's mouth on the screen made it easy to understand the pronunciation, it was even more positive to note that fourteen students responded with "strongly agree" that it was useful to see the teacher's mouth on the big screen. Three participants mentioned that being able to see the shape of the mouth on screen was helpful. This might suggest that it is less likely that learners pay attention to the shape of the mouth in a regular face-to-face setting. In fact, one participant actually mentioned that it is easier than when looking at the teacher's mouth. Similar to statement one, no students indicated that seeing the shape of the mouth on the large TV screen was not useful. Answers to the follow-up question included the following responses:

**Table 6.**  
*Second Statement - Follow up Question Responses*

<b>Seeing the teacher's mouth on the big TV screen made it easy to understand the pronunciation. If you agree, why was it helpful?</b>	
<b>Original response</b>	<b>Translated/rephrased response</b>
見えやすいです	easy to see
どう発音すればいいかわかるようになった。	Now I know how to pronounce it
発音しやすかった	easy to pronounce

見やすい	easy to see
どのような口の形で発音するのがわかったから	Because I know how to shape the mouth for the pronunciation
発音の仕方が分かりやすかったから	It was easy to understand how to pronounce
似ている音の単語の発音の違いに気づけた	Noticed differences in pronunciation of words with similar sounds
席が離れていたので大きい画面で見れたのは良かった	It was good to see it on the big screen because the seats were far away
実際に先生の口を見るより大きくわかりやすいから	It's bigger and easier to understand than actually looking at the teacher's mouth
The teacher projected it on the TV screen and taught me slowly	
ゆっくり発音してくれたから	Because you pronounced it slowly
発音の仕方がよくわかった	I know how to pronounce
I was able to imitating the teacher's mouth	

Regarding the third statement, whether before doing this type of activity participants knew how the shape of the mouth affects pronunciation, the results are probably the most interesting, with more spread across the agree-disagree scale. Five students indicated neither agree nor disagree for whether they had prior knowledge of how the shape of the mouth can affect pronunciation. This is positive as it shows that students are aware, yet might not have had much opportunity to practice doing these types of activities.

The fourth statement, if participants felt that their pronunciation had improved due to these activities, also shows an interesting trend. Eight students indicated with “strongly

agree” that their pronunciation had improved, similarly, eight students indicated with “agree”. Since these activities primarily focussed on improving students’ ability to discriminate between sounds, it is not surprising that only eight students indicated with “strongly agree”. As might be expected, the eight “agree” responses could indicate that these students do not feel strongly that their productive skills improved as a direct result of the discrimination activities. However, it is still promising that no students indicated “disagree” to this statement. There were thirteen responses to the follow up question about which sounds had improved the most. Over half of the responses indicated that distinction between R/L had improved the most.

The fifth statement, whether or not participants enjoyed the activities, was very positive with fourteen responses indicating “strongly agree”, three indicated “agree” and only one indicated “neither agree nor disagree”. No students indicated “disagree” or “strongly disagree”. Particularly promising was the fact that four participants mentioned the enjoyable nature of being in a group. In response to the follow-up question about why they were enjoyable, responses included the following:

**Table 7.**  
*Fifth Statement - Follow up Question Responses*

<b>I enjoyed doing these types of activities. If you agree, why did you enjoy them?</b>	
<b>Original response</b>	<b>Translated/rephrased response</b>
みんな一緒にいるから楽しい	It's fun because everyone is together
ただ教わるだけでなく生徒同士で確認し合うのがいいと思った。	I thought it would be good to check each other with students instead of just being taught
Because I could know some words	
楽しんだ方が楽しいから	Because it's more fun to have fun
クイズ形式で楽しかったから	I enjoyed the quiz format
正しい発音がわかっていくのを感じた	Because I felt that I was beginning to

から	understand the correct pronunciation
話し合いしながら取り組めて楽しかった	It was fun working while talking
グループワークも活用して行なったから	I also used group work
ゲーム形式で楽しく英語を勉強できたから	I was able to study English in a fun way through games
We were able to practice pronunciation and study English together	
とてもわかりやすかったから	because it was very clear
グループになって楽しくできたから	It was fun being in a group
Because it was very good for me	

Finally, the last statement indicated overall satisfaction with the activities with all students indicating either “strongly agree” or “agree” that they would like to do similar types of activities next semester.

### **Data Limitations**

There are two obvious limitations to the data. The first is that interesting insight into student perspectives was missed because of the methodology used. Had the students been interviewed in person, more follow up questions could have been asked, perhaps giving more insight. For example, it might have been interesting to probe further what was meant by “interested in English”. This participant could have perhaps expanded on why and how exactly it was interesting. Secondly, the data sample is very small. Even though twenty-one students expressed an interest in doing the questionnaire, only eighteen went on to complete it.

### **Considerations**

Even though classes had returned face-to-face after the height of the Coronavirus pandemic, it was still necessary to use a plastic screen provided on the teacher's desk during the pronunciation activities. It was necessary for me to momentarily remove my face mask. This meant that it was not possible for me to move freely around the class during the activities during the demonstration. It is necessary therefore to carefully consider where exactly the teacher should stand for the demonstration sections of the class. While the use of face coverings is still recommended and is likely to remain so for the foreseeable future, the use of face coverings does hinder somewhat the impact of teaching pronunciation using this approach.

While Phillipson's argument that pronunciation teaching should not focus solely on the native speaker as a model is highly relevant, a large number of English teachers at Asia University do in fact come from countries where English is the official language. However, the primary objective of the materials and procedure set out in this project should be remembered, to improve learners' perceptions of sounds. For this reason, I feel that these activities were advantageous and succeeded in raising students' awareness of receptive pronunciation. Kelly (2000) suggests that issues of reception and production can be dealt with separately, and students must still be given opportunities to do production activities. In the case of the three CEFR A1-A2 Freshman English classes in this study, dealing with receptive pronunciation skills separately proved beneficial.

Another interesting consideration is the degree to which the teacher counsels the students on the techniques. It is beneficial to explicitly teach students about sub-skills of reception and production in relation to pronunciation. Informing them about the difference between reception and production for pronunciation for example, makes the learning process more meaningful. This type of guidance might be done either before, during, or after the activities.

This project drew on real time pronunciation demonstrations. Another consideration for this approach concerns the use of screen casting or video editing software. Future lessons could incorporate the use of pre-recorded videos of screen casts of the teacher pronouncing the words to be used alongside the class materials. This technique might also help mitigate the barrier caused by wearing face masks during this approach. However, the pre-determined nature of a screen cast could also lessen the appeal of demonstrating the pronunciation features in real time.

A final consideration concerns when to introduce these activities. Teachers wanting to use similar activities might consider incorporating these activities into their classes at the start of the semester. This way students are made aware of the receptive skills involved with pronunciation features at the beginning of the course, which in turn might make on the spot use of video for error correction more meaningful for students. However, in this case, the students were going to study one more semester of Freshman English and therefore could take the skills learnt in the stand-alone class into the second semester.

### **Recommendations**

Based on the above results and discussion, the following recommendations can be made:

1. A multi-modal approach to teaching pronunciation using a TV screen or overhead projector proves engaging, motivating and satisfying for Freshman English students.
2. Pronunciation instruction should draw on activities that are perception-based, not only production-based.
3. It can be advantageous to treat perception-based and productive based instruction separately.
4. Teachers should carefully consider how and when they might decide to remove face coverings to draw attention to how to articulate certain sounds.

### **Conclusion**

The decision to conduct Freshman English classes online brought many challenges for instructors. However, this account shows how remote teaching on Zoom brought about an opportunity for a valuable aspect of teaching pronunciation, which has been transferred to face-to-face classes. While this was only a small study, the results and discussion above reveal that Freshman English students benefit from observing how the shape of the mouth affects pronunciation and how this can aid their receptive pronunciation skills.

It is wise to remember, however, that this project accounts only for an extremely narrow aspect of pronunciation. There are many other aspects of pronunciation which this approach cannot address. Despite this, I feel strongly that it would be beneficial to incorporate the use of large screen video for perception-based activities in future Freshman English classes.

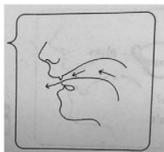
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Appendix 1: The Materials

Activity 1

/θ/  
third



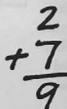
1



mouse mouth



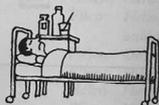
2



sum thumb



3



sick thick



4



sink think



5



pass path



134

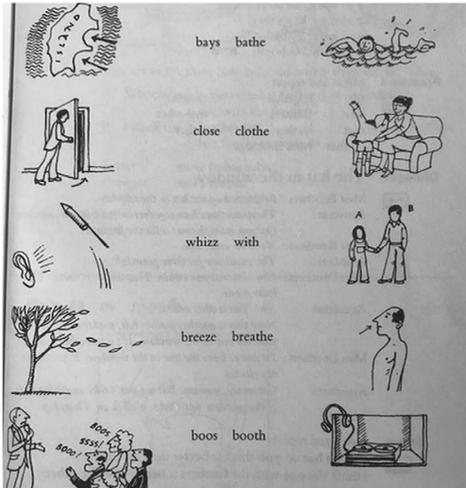
Adapted from *Ship and Sheep An Intermediate pronunciation course* New Edition (1981) Ann Baker

## Activity 2

/ð/  
that



1



bays bathe

2



close clothe



3



whizz with



4



breeze breathe



5



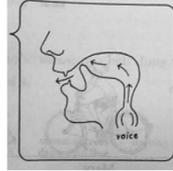
boos booth



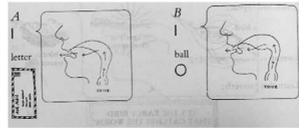
Adapted from *Ship and Sheep An Intermediate pronunciation course* New Edition (1981)  
Ann Baker

### Activity 3

/r/  
road



//  
light



1



long wrong

$$\begin{array}{r} 4 \\ + 4 \\ \hline 9 \end{array}$$

2



light right

$$\begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array}$$

3



load road



4



jelly Jerry



5



fly fry



6



glass grass



Adapted from *Ship and Sheep An Intermediate pronunciation course* New Edition (1981)  
Ann Baker

## Appendix 2: Participant Consent Form (Japanese and English)

英語教育センター 同意書

**プロジェクトタイトル:** テクノロジーを使用して発音を教える

### 参加者の皆さまへ

英語教育センターの INSTRUCTOR によって実施される調査へのご参加をお願いしております。調査の基本的な説明は下記の通りです。説明を読み、先生方と話し合ってください。よく理解できるよう気軽に質問してください。回答を聞いた上で、調査にご参加いただける場合は、この用紙にサインをし、この調査について説明をしてくれた人を持って行ってください。

- 1. 出席** 調査への参加は完全に任意であり、理由なしにいつでもやめることができることを理解しています。参加しなかったり、調査中に辞退したりしても亜細亜大学、英語教師、そして調査する側の人間との関係に、今にも今後にも一切影響はありません。どんな理由であれ、調査への参加中に不満を感じた場合は、辞退もしくは先生に相談できるということを理解しています。
- 2. 連絡** この調査に関することで質問や心配な事があった場合、INSTRUCTOR に連絡します。調査参加者としての権利について質問がある場合、英語教育センター次長である Joshua Trued ([trued\\_joshua@asia-u.ac.jp](mailto:trued_joshua@asia-u.ac.jp)) に連絡をすることができますことを理解しています。
- 3. 手続きの説明** 調査に参加するには (10) 分かかることを理解しています。また、この調査で私は テクノロジーを使って発音を教えることについての私の意見についてのオンライン質問票に記入してください (質問票の質問は英語と日本語で書かれ、必要に応じて日本語で答えることができます)。を尋ねられること理解しています。
- 4. 守秘義務** 私の回答と成績の情報は常に安全かつ非公開に保管されていることを理解しています。調査結果が分析される前に自分の名前が削除され、匿名になることも理解しています。私の回答は三年以内に破棄され、この調査のために私によって提供される情報は、公共に研究報告に使用される可能性があるが、全ての情報は匿名化されることを理解しています。
- 5. 報酬** 参加することによる報酬は一切ありません。
- 6. リスク** この研究は日常で出くわすより大きいリスクを抱えないことを理解しています。

署名者である私は、上記の情報を読み、理解し、質問する機会があることを理解しています。私はこの亜細亜大学の INSTRUCTOR によって行われる調査に参加することに同意します。

\_\_\_\_\_  
署名

年/月/日 \_\_\_\_\_

\_\_\_\_\_  
お名前

**Project Title:** Using technology to enhance teaching pronunciation

**Dear Participant,**

You are being asked to participate in a study conducted through the Center for English Language Education by INSTRUCTOR (researcher) that involves research. A basic explanation of the study is written below. Please read this explanation and discuss it with your teacher. Feel free to ask questions to help you understand the study. After any questions you may have are answered and if you decide to participate in the research, please sign this form in the presence of the person who explained the study to you.

**1. PARTICIPATION:** I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason. I understand that if I decide not to participate, or decide to withdraw at any time during the study, it will have no effect on my relationship with Asia University, my English teachers, or the researchers, now or in the future. I understand that if for any reason I experience discomfort during participation in this study, I am free to withdraw or discuss my concerns with my teacher.

**2. CONTACT:** I understand that if I have any questions or concerns about this research, I may contact INSTRUCTOR. If I have any questions about my rights as a researcher participant, I may contact Joshua Trued, CELE Vice-Director, at [trued\\_joshua@asia-u.ac.jp](mailto:trued_joshua@asia-u.ac.jp).

**3. EXPLANATION OF PROCEDURES:** I understand that my participation in this study will take about 10 minutes of my time. I understand that I will be asked to complete an online questionnaire about my opinions of using technology to teach pronunciation (the questions on the questionnaire will be written in English and Japanese, and I will be able to answer them in Japanese if I wish).

**4. CONFIDENTIALITY:** I understand that my responses and scoring information will be stored safely and privately at all times. I understand that before analyzing the findings my name will be removed and an anonymous code will be assigned. I understand that my responses will be destroyed within three years. I understand that information provided by me for this study may be used in the research report, which may be published, but that all such information will be anonymised.

**5. COMPENSATION:** I understand that I will not receive any compensation for my participation.

**6. RISKS:** I understand that this study involves no greater risk than encountered in everyday life.

I, the undersigned, have read and understood the above information and have been given an opportunity to ask questions. I agree to participate in this study conducted by Instructor (researcher) at Asia University.

\_\_\_\_\_  
**Signature of Participant**

Date \_\_\_\_\_

\_\_\_\_\_  
**Printed Name of Participant**

### Appendix 3: Survey Questions

1. What is your name?
2. The pronunciation activities that focus on the shape of the mouth were helpful for me. (3 is neither agree nor disagree).口の形に焦点を当てた発音活動は私にとって役に立ちました (3は賛成でも反対でもない)
3. If you agree, why were they helpful? あなたが同意するなら、なぜ彼らは役に立ちましたか?
4. Seeing the teacher's mouth on the big TV screen made it easy to understand the pronunciation. 大きなテレビ画面で先生の口を見ると発音がわかりやすくなりました。
5. If you agree, why was it helpful? あなたが同意するなら、なぜそれは役に立ちましたか?
6. Before doing this type of activity, I did not really know about how the shape of the mouth can affect pronunciation in English. この種の活動をする前は、口の形が英語の発音にどのように影響するかをよく知りませんでした。
7. I think my pronunciation has improved thanks to the activities that show the shape of the mouth on the big TV screen. 大きなテレビ画面に口の形を映し出す活動のおかげで、発音が良くなったと思います
8. If you agree, which words in particular do you think you have improved in terms of pronunciation? 同意する場合、特に発音の面でどの単語が改善されたと思いますか?
9. I enjoyed doing these types of activities. 私はこの種の活動を楽しんだ。
10. If you agree, why did you enjoy them? あなたが同意するなら、なぜあなたはそれを楽しんだのですか?
11. I would like to do more of these types of pronunciation activities next semester. 次の学期には、このような発音活動をもっとやりたいと思います。