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2023

## Partnering with Students to Increase Engagement and Inclusion in an Undergraduate Phonetics & Acoustics Course

Teresa Roberts

Portland State University, robertst@pdx.edu

Rik Lemoncello

Portland State University, rik.lemoncello@pdx.edu

DOI: 10.30707/TLCSID7.1.1675490380.893709

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### Recommended Citation

Roberts, Teresa and Lemoncello, Rik (2023) "Partnering with Students to Increase Engagement and Inclusion in an Undergraduate Phonetics & Acoustics Course," *Teaching and Learning in Communication Sciences & Disorders*: Vol. 7: Iss. 1, Article 8.

DOI: 10.30707/TLCSID7.1.1675490380.893709

Available at: <https://ir.library.illinoisstate.edu/tlcsd/vol7/iss1/8>

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## Partnering with Students to Increase Engagement and Inclusion in an Undergraduate Phonetics & Acoustics Course

### Abstract

An introductory phonetics course provides foundational content for future clinical practice and may serve as a student's first experience within the field of Communication Sciences and Disorders. The Students as Partners framework (Cook-Sather et al., 2014) offers a model for valuing student assets and experiences in co-creating learning materials to enhance active learning and deepen understanding. Incorporating positive affective feelings around learning complex material, integrating technology, and building a mutually respectful learning community can foster inclusive practices. In this manuscript, the authors share how redesigning an introductory Phonetics and Acoustics course at a large, urban, commuter, public university led to increased student engagement, increased practice, increased collaboration, and increased generalization. This was achieved through personalized content and activities, warm-up activities that fostered success and integration, and co-created active learning activities, such as phonetic memes, spectrogram cards, phonetic pun activities, and sociolinguistic discussions of personal experiences. Thematic analysis of course evaluation data for the redesigned course revealed themes related to: student-instructor partnerships; practice opportunities and clinical application; and sense of belonging within the learning community.

### Keywords

phonetics and acoustics, teaching and learning, students as partners, active learning, learning communities

### Cover Page Footnote

Author Contributions Teresa Roberts: Conceptualization (Lead), Writing - original draft (Lead), Writing - review & editing (Supporting). Rik Lemoncello: Conceptualization (Supporting), Writing original draft (Supporting), Writing - review & editing (Lead). Acknowledgements The first author would like to thank the many creative and enthusiastic CSD students who helped release phonetics from the confines of a textbook. This manuscript benefited from input from Mlcki Caskey, Megann McGill, Janet Cowal and encouragement from George Campbell.

Phonetics serves as the basis for clinical-decision making in assessment and treatment of speech sound disorders and discussions of phonological theories (American Speech-Language-Hearing Association [ASHA], 2016). Mastering foundational content knowledge, such as the International Phonetic Alphabet (IPA), enables students to engage in higher-level critical-thinking tasks (Lang, 2016), such as evaluating and analyzing patterns for diagnosis and treatment of speech sound disorders, as well as cross-linguistic analysis for speech differences. As an introductory course, phonetics can also play a crucial role in recruiting and retaining a diverse range of students by welcoming students to the field, building community, and promoting inclusion. This sense of inclusion can be further developed by actively involving students in the learning process and honoring the strengths, assets, and unique lived experiences they bring to the learning environment.

Phonetics has unique teaching and learning challenges that may affect persistence, success, and retention. A key skill in phonetics involves phonetic transcription. Transcribing requires advanced metalinguistic skills, including “phonemic matching, phonemic manipulation, and visual and auditory memory” (Robinson et al., 2011, p. 93). To transcribe sounds, students may need to learn to suppress semantic, pragmatic, and graphemic knowledge. Students learn to analyze phonemes within a complex taxonomic system that aligns with anatomical, physiological, and acoustic aspects of sound. Auditory working memory and proprioceptive skills further support developing transcription skills. Students may need to re-learn to sound out words, with similar practices and vulnerabilities as when first learning to read as young children, but often without opportunities for repeated learning attempts at decoding and encoding within the classroom. Developing this new skill places students in a vulnerable position, so creating a welcoming and inclusive classroom space that embraces learning and speech differences is crucial.

### **Traditional Phonetics and Acoustics Course: Context and Challenges**

The Phonetics and Acoustics course described here is taught by the first author, with the second author involved in periodic pedagogical discussions about the course. The course is a required undergraduate-level, four credit, 10-week course for CSD majors at a large public, urban university with enrollment between 25–30 students each quarter (offered multiple times throughout the academic year). The course has no prerequisites, so it is often taken early in the curricular sequence. Students are undergraduate (including many transfer students from community colleges) and post-baccalaureate students who may be new to both CSD coursework and the large, urban, commuter campus. More than half of the students enrolled each quarter are from racially and ethnically diverse backgrounds, bilingual students, or students with non-traditional backgrounds, such as returning students, first generation students, and veterans.

In this course, the instructor introduced students the articulatory and acoustic properties of speech, the IPA and phonetic transcription, the phonology of General American English, and the characteristics of phonemes across English dialects and world languages. The first author (hereafter referred to as “I”) first taught this course in 2015. This traditional course relied on a lecture format and included formative and summative evaluation: graded homework (e.g., transcription and phonological rules), a spectrogram analysis project, in-class quizzes, and an in-class final exam. There was limited opportunity for formative practice; students who struggled for

any number of reasons could have challenges accessing and mastering content and feel unsuccessful as learners or future professionals.

As the instructor, I immediately recognized student challenges with the memorization requirements, listening tasks, and lack of personal connection to the content. An early step in addressing these challenges was adding more interactive, in-class, partner and small group time. These interactive elements involved practicing sound productions, experimenting with perception, and discussing clinical examples. Nonetheless, many students struggled with common challenges, such as orthographic patterns interfering with the IPA or difficulty attending to and manipulating discrete sounds. Students with learning difficulties stated concerns about their ability to learn the material. International and multilingual students expressed hesitation about their ability to analyze the speech sounds of English. Themes derived from open-ended questions on the standard departmental 2015 course evaluations related to positive and negative aspects of the course. Students appreciated partner and small group interactions, interactive phoneme production, and clinical examples. Students noted confusion with spectrograms, concerns about the amount of content within lectures, and challenges with the level of difficulty of larger projects. Additionally, when asked about the applicability of course content, students did not describe clear connections between phonetics and clinical services. In other words, students did not appear to recognize the importance of phonetic analysis of speech sounds within the assessment and intervention process, as evidenced by comments on how the material was simply a requirement for graduate school or related to language disorders, as opposed to speech sound disorders.

### **Rationale for Course Redesign**

The different types of student challenges prompted me to seek additional, creative teaching methods that incorporated more active student engagement. My desire to increase engagement was further fueled by my own early academic experiences with phonetics. As instructors, personal experiences might have shaped our own approach to a given course or topic area (Shadiow, 2013). In redesigning the course iteratively over the next several years, I reflected on my early fears about phonetics when I was a student. Years ago, when I was in college, a friend encouraged me to change majors, from Linguistics to CSD. I told her: “I can’t. I’m not good at phonetics.” She responded by saying, “That’s okay. You never really use it.” In my later work as a clinician and instructor, I found that we had both been wrong.

In redesigning this Phonetics and Acoustics course, my intention was to make content accessible, applicable, personal, and interesting. When students view passing phonetics as solely a requirement, and not foundational to the field, they were likely unable to access fascinating and meaningful aspects related to clinical application, including sociolinguistic significance and clinical responsibility for diagnostic accuracy. Furthermore, integrating social-emotional, affective learning components could help build community, a sense of belonging, and reduce barriers to learning, which help ensure that everyone has equitable access to the content (Cavanagh, 2016).

The purpose of this manuscript is to describe the redesign of an undergraduate Phonetics and Acoustics course using the Students as Partners (SAP) framework (Cook-Sather et al., 2014) as an overarching approach. This framework allowed me to incorporate a variety of different, co-created active learning activities with personalized, affective learning components, to create a supportive

learning community where everyone could be welcomed into phonetics and speech-language pathology. In the following sections, we first present background details supporting active learning and inclusion as part of the course redesign, followed by a discussion of why and how the SAP framework was applied to this redesign. We then provide several examples of co-created learning activities for phonetics. We conclude with a discussion of outcomes and a reflection on the course redesign.

**Course Redesign for Active Learning and Inclusion.** In the traditional course structure, students often focused on memorization to perform on assessment measures. Unfortunately, relying on memorization for tests alone may serve as a barrier to inclusion for many students (e.g., multilingual, neurodiverse, under-represented) and even arrest any further progression within the field when students do not perform well. Creating a more inclusive, welcoming, and empowered classroom supports different learning approaches and embodies principles of equity and inclusion. Based on these experiences, I sought to create a more inclusive learning community which built on principles of active learning, with multiple formative practice opportunities. It was important to create a learning community where students did not feel afraid of taking risks or fear ending their aspirations of becoming a speech-language pathologist (SLP) because of challenges with phonetics. Based on course evaluation feedback, it was also important to help students feel connected to the course content through personalization, welcomed into the field, and empowered to understand the clinical relevance of phonetics as future SLPs.

Active learning places students in a position of authority about the knowledge that they gain through experiential activities (Hanstedt, 2018). Instead of passively receiving content, students are centered as active learners. Learner-centered teaching gives students decision-making power over course content, involves students in teaching the content to other students, and gives students some control over how they learn course material (Weimer, 2012). When applying their authority (Hanstedt, 2018) to the clinical context, students can engage in phonetic analyses that replicate activities expected in future clinical settings (e.g., place-manner-voice analysis for identifying patterns in phonological processes for children with speech sound disorders).

Personalizing content promotes inclusion because students' lived experiences are applied to the material, and this empowers underrepresented students to feel connected to what they are learning (Oleson, 2021). From a social-emotional learning perspective (Cavanagh, 2016), an inclusion goal for the course was about student attitudes toward the content. A goal was to encourage students to feel curious and fascinated by speech production, as opposed to fearful or intimidated. In the next section, we describe how the traditional course was redesigned to incorporate these principles using the SAP framework to center students' lived experiences with personalized, flexible, repeated, and varied co-created activities that maintained course objectives and standards.

***Applying the SAP Framework to Phonetics and Acoustics.*** Applying the SAP (Cook-Sather et al., 2014) framework allows for building active learning opportunities and supporting connections between the content and students' lives. The SAP framework proposes the democratization of learning, with students playing an active role in the learning experience, including co-creating content and aspects of self-assessment. Students can contribute to multiple elements of a course that support their own learning and that of their peers. The sharing of power is founded on respect, reciprocity, and responsibility. Faculty respect student perspectives, demonstrate reciprocity

within balanced interactions with students, and share teaching and learning responsibility with students. Faculty and students both learn from each other through collaboration. The SAP framework was the foundation for gradually adding multiple, creative phonetics projects involving co-creation of social media, games, and practice opportunities to promote active learning.

The SAP framework was chosen because it disrupts power differentials within the classroom, increases student belonging, and supports flexible methods for student co-creation of content (Bovill et al., 2016). In contrast to viewing a student in the role of “a passive customer” (Matthews et al., 2017, p. 11), research on the SAP has shown that undergraduate students are interested in co-creating curriculum and assessment. Sharing power within specific parameters of a course provided students with a context for their contributions. Common objections to sharing power with students might relate to accreditation standards, student interest, and instructor beliefs about their own expertise (Murphy et al., 2017). When applying the SAP to this phonetics course, the core learning objectives of transcribing and analyzing speech remained constant, ensuring that accreditation standards were intact.

When students create material that supports their own and their peers' learning, they recognize their significance within the classroom community. For students from marginalized backgrounds, the SAP framework supports affective learning, cultivates engagement in the learning process, and positions students as active agents who are empowered to advocate for their needs (Cook-Sather, 2018). The instructor respects students' contributions and considers students as consultants, which is especially meaningful from an equity perspective (Cook-Sather & Seay, 2021). In other words, when instructors value students from racially and ethnically diverse backgrounds as experts, students “experience themselves as legitimate members of the community” (Cook-Sather & Seay, 2021, p. 11).

Healey et al. (2016) provided a conceptual model for SAP and described how student engagement in learning, teaching, and assessment is a common first step in establishing partnerships with students. In this phonetics course, students were introduced to SAP by co-creating learning materials for individual projects and activities with the instructor in a co-coordinator role. Implementation involved a series of informal meetings with students, individually and in small groups, both during small group activity time in class and outside of class (e.g., right before or after class and during office hours) to discuss their interests and potential involvement in co-creating learning materials. All students were also offered the opportunity to co-create materials through regular invitations in class and on the learning management system (LMS). Informally presenting these invitations was designed to reduce stress or pressure and show that these were non-graded and non-required opportunities. Although redesigning this phonetics course used a gradual, iterative approach for student co-creation, each series of small changes helped redistribute power by enabling students to create learning materials that helped them and their peers.

Students collaborated to develop learning activities using a variety of modalities, including social media. Adding social media to phonetics capitalizes on how social media is frequently part of everyday life, mediates social and informal interactions, increases engagement, and is outwardly focused (Tess, 2013; Vinu et al., 2011). Material on mobile devices helped students engage with course content and “situate their learning in the context of the environment as social media was already part of their daily life” (Gilkas & Grant, p. 24). Partnerships with students in areas in which

they are likely already experts, such as social media, acknowledged the complementary skill sets in instructor and student relationships (Cook-Sather et al., 2014).

In addition, affective learning strategies that tap into emotions, such as humor, were implemented to facilitate positive emotions related to learning (Cavanagh, 2016). Instructors can use affective strategies and humor to support students' attention, memory, and motivation for learning (Cavanagh, 2016). Humor serves as a means to build learner enthusiasm and build understanding, as "getting many academic jokes requires deep, elaborate processing" (Cavanagh, 2016, p.75). Humor, empathy, and attention to affective emotions can also help to facilitate personal connections and a sense of belonging to build a supportive learning community.

***Redesigned Course Structure.*** The Phonetics and Acoustics course met in-person twice per week throughout the ten-week term, with content available on an online LMS. Class sessions expanded to consist of combinations of short lectures, videos, partner activities, and weekly small group application projects. Students completed regular, weekly homework and discussed the homework in small groups. The redesign of this course unfolded gradually over three consecutive years, and expanded the course beyond a traditional model with lectures, homework, and exams to a learning community where students co-created personally-relevant learning materials. Integration of additional, co-created phonetics projects described in the next section supported the required activities and were voluntary or offered for nominal extra credit.

***Personalized Content.*** At the start of the course, all students completed detailed learning profiles that included questions about their linguistic backgrounds (all languages and dialects to which they have been exposed), musical experiences, and art and technology skills. Students were asked about their learning goals for the course and to share information about what helps them learn. After reviewing the student learning profiles, I sent individual email messages to students about partnering in the learning process, based on their experiences. For example, multilingual students were asked if they would be interested in exploring and sharing cross-linguistic analysis with the class. Students with musical experience were asked about demonstrating intonation patterns and other paralinguistic elements to the class. Students with artistic experience were asked about supporting peers with creating IPA memes. Students with multiple skills and interests were offered different choices for possible projects.

***Warm-Up Activities to Build Community.*** Regular warm-up activities at the start of each class reoriented students to the material for quick review (Lang, 2016) and also built community. Active learning warm-ups involved decoding or transcribing inspirational sayings and encouraging messages with IPA. Messages related to learning from one's mistakes, the benefits of practice and effort, and other growth mindset themes (Yaeger & Dweck, 2020) to reinforce the learning process. As I introduced topics, I also promoted emerging occupational identity (e.g., "as speech scientists, we will learn about spectrograms," "as clinicians, we compare characteristics of consonants") to foster a sense of belonging and inclusion in the profession.

***Co-Created Active Learning Activities.*** Student-instructor collaborations led to creation and integration of many different examples of learning materials. In this section, we present examples that could be readily integrated into a similar course: phonetic memes, spectrogram cards, phonetic

puns and wordplay, sociolinguistic discussions of personal experiences, co-created practice and assessment, phonetic podcasts, and phonetic games.

**Phonetic Memes.** As an ongoing class activity, students created phonetic memes using pictures, images, and photographs that they captioned with IPA transcriptions. Resources were provided for creating captioning using an online IPA keyboard (<https://westonruter.github.io/ipa-chart/keyboard/>) Students were given instructions on methods to add text to images using software and other tools (e.g., Microsoft PowerPoint, Adobe Photoshop, Microsoft Word). Students offered tips to each other on choosing memes and using software and other tools they discovered [e.g., an IPA phonetic keyboard app (<https://ipa.typeit.org/>) that could be used for creating memes, texting, and social media]. I shared multiple examples of memes, including memes from prior courses and instructor-created examples (see Figure 1) before asking students to create their own memes. Student-created memes were shared at the beginning of class, and students had the option of posting them on their own social media pages or a phonetics Instagram page (<https://www.instagram.com/phoneticspeak/>), which I designed with student input (Roberts, 2017).

### Figure 1

*Example of Instructor-Created Phonetic Meme: “I saved you a seat”*

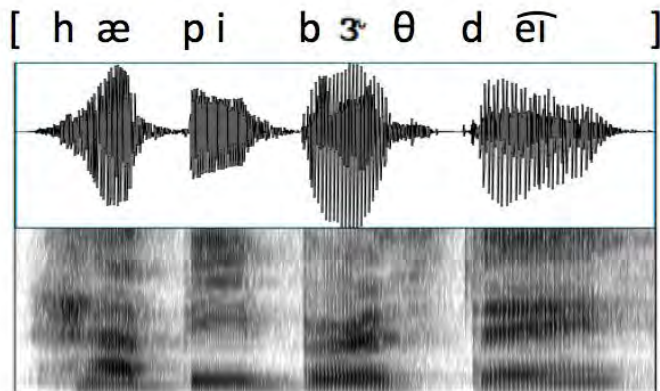


**Spectrogram Cards.** When studying spectrograms, students were encouraged to use Praat, a free spectrogram software (<https://www.fon.hum.uva.nl/praat/>), to create customized greeting cards in either a printed or digital format, as shown in the instructor-created example in Figure 2. Integrating spectrograms into daily life helped to demystify the visual outputs and increase positive affect for what had been perceived as difficult material. To contribute to school belonging, or inclusion as a member of the school community (Gummadam et al., 2016), I provided students with printed postcards featuring photographs of the university campus with the university name in IPA. Using University services, I purchased cards printed at the university print center. Students often displayed their cards on their binders (inserted between the binder and the plastic overlay) and reported posting them in their living spaces or sharing them with family.



**Figure 2**

*Example of Instructor-Created Spectrogram Greeting Card*



**Happy Birthday!**

**Phonetic Puns and Wordplay.** Phonetic puns and wordplay were used to introduce new content. Explaining and successfully detecting the humorous elements in phonetic puns (e.g., Linguist Llama: <https://lingllama.tumblr.com/>) established a shared community or insider perspective that is rooted in mastery of content. Students were able to share the phonetic puns and explain them to their peers, which allowed students to teach others. As an example of wordplay, when introducing articulatory place and manner for world languages, we discussed how traveling to new “places” and learning new “manners” are like learning the places in your mouth and manners for the tongue (Katz, 2013).

**Sociolinguistic Discussions of Personal Experiences.** Small group discussions in-class focused on a variety of topics; for each discussion, I offered resources and guiding questions to help students make connections and deepen collaborative learning. Two discussion topics in particular focused on linguistic bias with a culturally and linguistically responsive lens: sharing your personal linguistic history, and times you have been judged based on your speech. Valuing students’ backgrounds and providing access to content served as a form of culturally responsive education (Addy et al., 2021) for a strengths-based approach to diversity (Gay, 2002; Paris, 2012).

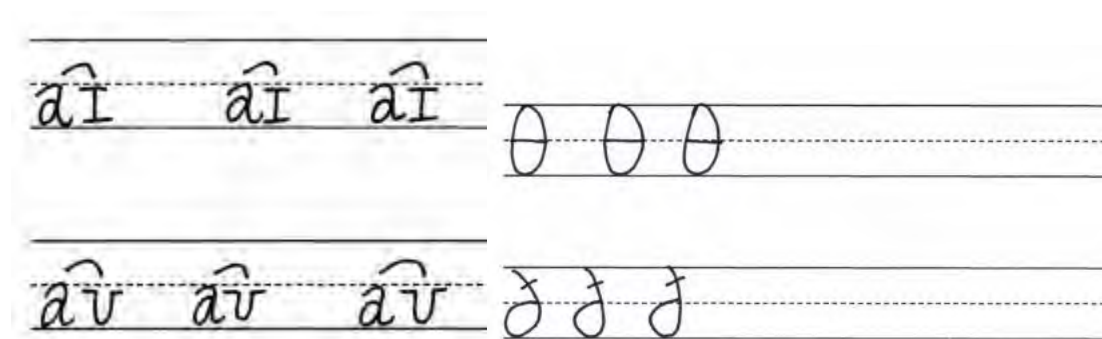
Students expanded on the sociolinguistic discussions of personal experiences by volunteering to present short, five-minute informal presentations at a future class. Multilingual and multidialectal students researched and presented cross-linguistic analyses that compared and contrasted phonemic and phonetic inventories (e.g., English/Spanish, Southern dialect/General American English). Students co-created and shared resources that would be useful to future clinical practice addressing linguistic differences with a culturally responsive lens. These activities built students’ research and presentation skills and provided role modeling for peers on how they could also share their own strengths and perspectives to teach others, helping to foster the learning community.

In support of sociolinguistic discussions, I attempted to treat languages and dialects respectfully by connecting them to their countries of origin and considering the ability to produce sounds across dialects and languages to be an asset. Consonants and vowels from world languages were presented with scaffolded transcription practice time and guidance on sound productions. From a clinical perspective, I explained how identifying phonemes across world languages is the foundation for cross-linguistic analysis to differentiate between a linguistic difference versus a disorder. Accurate speech production analyses and diagnoses that account for bilingualism and multilingualism reduce bias and barriers to care (ASHA, 2021). Biases and assumed background knowledge within textbooks were directly addressed, such as culturally based idiomatic expressions and dialectal vowel reduction patterns.

When discussing personal linguistic histories, I explained how our linguistic histories connect to our communities and sense of identity. Multilingual and multidialectal students shared their experiences with simultaneous or sequential bilingualism or multilingualism. When discussing times students have been judged based on their speech, students frequently described societal judgments related to binary constructs of gender and generational markers in speech (e.g., glottal fry, pitch, intonation patterns), dialect (regional and community belonging), articulation disorders, and bilingualism. Students described the context for these judgements and how it made them and their families feel. Peers, especially mono-lingual and mono-dialectal students, gained insight into the experiences of learning multiple languages and dialects, societal reactions to linguistic differences, the extent of linguistic biases (Lippi-Green, 2012), and client insider perspectives.

***Practice Activities and Resources.*** Students assembled word lists for practice activities, such as rhotics and single syllable words, that were shared on the LMS as Microsoft Word documents. Students also added online phonetic resources to the LMS, such as the Pink Trombone speech synthesizer (<https://dood.al/pinktrombone/>) to “play” with speech sounds. Short online quizzes allowed for multiple attempts to encourage repeated interaction with the material. Students were provided with instructor-created Quizlet online flashcards and premade flashcards to practice learning phonemes, key vocabulary, and consonant and vowel rules. Students engaged in initial learning activities where they deduced phoneme sounds by comparing and contrasting words written both orthographically and phonetically to explore how their spelling knowledge supported or contrasted with IPA. Students with artistic abilities created practice symbol formation activities for the class, such as shown in Figure 3.

***Co-Created Assessments.*** Students contributed to course assessments with co-created quizzes that were used in graded assessments for the entire class. Students chose words for transcription that demonstrated consonant rules, such as partial devoicing and vowel epenthesis. Students then made a recording of themselves or a friend saying the words to submit for use in a quiz. Co-created assessments provided students with a sense of ownership in how their learning is being evaluated (Cook-Sather et al, 2014). In co-creating quizzes, I reviewed and assembled the set of audio recordings to design a quiz with narrow transcription for consonant rules. Students also engaged in self-reflective measures as part of the quiz. For example, students received credit for describing what was easy or difficult within a quiz, areas of challenge in transcribing, and learning strategies that supported their success.

**Figure 3***Phonetic Symbol Formation Practice*

**Phonetic Podcasts.** In discussions with students with musical experience, we co-created the idea of phonetic podcasts for students to present and discuss their experiences learning phonetics (Oloo & Elijah, 2015; Ross et al., 2020). Students contributed to whole class learning through the sharing of their podcasts. Student-created podcasts involve students producing and sharing content by building upon concepts to increase engagement and support learning, as opposed to receiving information passively (Lee et al., 2008; McLoughlin & Lee, 2007; McGarr, 2009). Research on podcasts has shown that students recognized that “creating their own podcasts was a valuable learning experience” (Phillips, 2017, p.166). Student-created phonetic podcasts reinforced concepts, built learning communities, and encouraged creative elements. Students voluntarily created 10-15 minute phonetic podcasts for the class using Audacity (<https://www.audacityteam.org/>), a free, open source, cross-platform software for recording and editing audio files. Both the students and I contributed ideas for topics based on interests and common transcription error patterns. Topics included: syllable stress, sentential stress, intonation contours, and diphthongs and triphthongs. Students personalized the podcasts by including their own clever introductions to podcast episodes (“this is 99% phonetics brought to you from the [university name] library”) and adding music or sound effects. Podcasts were made available on the course LMS. Students reported that listening to or being involved in the creation of podcasts made them better prepared for class and improved mastery of IPA. Students who created podcasts also described how the activities fostered friendships and a sense of belonging beyond the classroom (“Listening and participating in the podcasts helped me to engage with my peers”).

**Phonetic Games.** To extend phonetics beyond a single course, games can help students master new skills and develop their identities as learners within a specific area of study (Tierney et al., 2014). Games are familiar to many students, given their widespread social use, often within online platforms and social media (Tierney et al., 2014). Games and play activities provide repeated opportunities to test learning and receive non-graded, formative feedback to support learning. Games establish a rule-based environment, clear goals and objectives, meaningful context, and repeated trials (Lister, 2015). Common elements within gamification include points for instant feedback, levels for graduated scaffolding, badges for symbolizing achievement, and leaderboards to increase motivation (Lister, 2015). Games can target specific skills and highlight important elements to increase their salience (Lang, 2016), such as the consonant characteristics of place,

manner, and voice. Furthermore, games can establish affinity spaces, which may foster a shared community and belonging for group members (Gee, 2014).

I established a partnership with the university chapter of the National Student Speech Language Hearing Association (NSSLHA) to create regular “Fun-etic Friday” events (Roberts & Niemann, 2018). Students contributed to the design of the events, including choosing and adapting games, leading activities, and creating learning tools, such as consonant and vowel charts. Familiar games were adapted to feature phoneme identification and transcription for in-person and virtual events. In-person games included: Lotto or Bingo boards with consonants cards described by their characteristics of place, manner, voice; Hangman using IPA; first name acrostics on mini whiteboards (see Figure 4 for an instructor-created example); and commercially-available games adapted for transcribing, such as “Last Word” (a category game), “Headbanz” (a guessing game), “Blots” (an inkblot describing game), and dry erase dice with rhoti to create multiple words with rhotic vowels. Collaborative transcription within the games encouraged discussions of alternate pronunciation of common words and common variations. Social connections were encouraged through name games with transcriptions (e.g., name and adjective alliteration, and getting-to-know-you questions about favorite foods, activities, and hobbies for transcription). Virtual phonetic events used Jamboard and Zoom for students to interact simultaneously with phonetic activities. Jamboard slides featured charts, practice words, and word lists. Students used the highlighter tool to circle the corresponding phoneme on charts for a given word and symbols to incomplete words. Zoom breakout rooms were available for students to work together to transcribe words from a themed word list. Students reported enjoying these game events while also developing skills (“fun way to practice,” “quickly think on the spot,” “interactive setting,” “the more I played, the more, I remembered”).

#### Figure 4

*Phonetic Acrostic for “Teresa: True, early, even-tempered, smart, amazing”*

t tʃu  
 ə əli ɜli  
 i ivɛn tɛmpɛrɛd  
 s smɑnt  
 ə əmɛɪzɪŋ

#### Outcomes of and Reflections on Course Redesign

The course redesign described in this paper capitalized on student assets and contributions, affective learning, and technology. The redesign also focused on building a sense of belonging and increased engagement, practice, collaboration, and generalization. This was achieved through

personalized content and activities, warm-up activities that fostered success and integration, and co-created active learning activities, such as phonetic memes, spectrogram cards, phonetic pun activities, and sociolinguistic discussions of personal experiences. Thematic analysis of responses to open-ended questions on standard departmental course evaluations for the redesigned course revealed themes related to: student-instructor partnerships; practice opportunities and clinical application; and sense of belonging within the learning community.

The theme of student-instructor partnership related to ownership, enthusiasm, and excitement for the content. Both the instructor and students valued each other's shared contributions and contributed to positive emotional experiences. Students readily made unexpected and clever associations, such as how perceptual constancy for phonemes might prompt people to think that their dogs can talk. In the role of teaching, I gained insights into students' study habits, outside interests, and daily activities. Building on students' strengths and assets allowed them to be in leadership roles where their contributions supported learning for the entire class. I found that partnering with students on creative projects also built my own appreciation of the complexity and applicability of the material. These reciprocal feelings of enthusiasm meant that both the students and the instructor were excited to engage in the projects and activities because of the novel creative aspects. Learning was also connected to personal identity. Partnering with students on relevant and contemporary phonetics activities and projects helped them integrate the content into their everyday lives.

The theme of appreciation for the variety of practice and learning activities with clinical application showed how students valued incorporating technology for personally relevant projects. The meme activity was specifically highlighted (e.g., "I loved the meme project!"). Students shared that using phonetics with social media made learning more personal and enjoyable. Students noted that social media was an engaging medium for learning and provided fun opportunities for regular exposure with multiple examples. Incorporating social media extended the content beyond the duration of the course and the boundaries of the classroom. Former students have described how they still use IPA to send text messages to peers. Along with comments about the course, I was also pleased to see students describe how phonetics was applicable and essential to their future work as clinicians (e.g., "The study of sound and articulation is the heart of the SLP education, this knowledge is very useful for treatment!" or "an understanding of phonetics and acoustics is imperative to a successful SLP career.").

The theme of belonging within the learning community was meaningful for all of the students, and especially for students who may have otherwise experienced barriers to learning (Gummadam et al., 2016). Students indicated that the classroom community fostered an open dialogue and safe space (e.g., "an atmosphere of comfort and openness around asking questions about the material"). As an instructor, creative teaching methods and partnering with students established a sense of camaraderie within the classroom and a culture of sharing. This reciprocity meant that I, as the instructor, honored the ways that students contributed to the content and advanced activities with their own creative interpretations. As a class, we were able to describe how we made sense of the topics, found personal connections, built on positive emotions, and described relevance in our everyday lives by sharing stories of noticing phonetic phenomena in natural contexts.

## Implications for Future Course Redesigns

Although redesigning a Phonetics and Acoustics introductory course was the focus of this manuscript, instructors can partner with students within courses across the foundational CSD curriculum. Empowering students to co-create elements using technologies that build on affective learning may be especially meaningful when students are new to the field or establishing institutional membership. Activities that yield novel content and build on student assets can be inherently motivating; students have ideas about how they learn and what is fun or interesting in relation to the material. Partnering with students provides leadership opportunities and shows how their efforts have academic and social significance. We call upon faculty to consider adding one creative element to a course and slowly building a culture of student contributions over time. Faculty can partner with students to provide an inclusive environment for innovative teaching that empowers students from a diverse range of backgrounds, broadens student perspectives, and capitalizes on students' assets for creative and engaged learning. Having one or more small, co-created projects that focus on active learning, positive emotions, and a sense of belonging can make the material more salient, memorable, and personally relevant.

## Disclosures

Disclosures for Dr. Teresa Roberts:

*Financial*—Receives a salary from Portland State University.

*Nonfinancial*— No relevant nonfinancial relationship exists.

Disclosures for Dr. Rik Lemoncello:

*Financial*—Receives a salary from Portland State University.

*Nonfinancial*— No relevant nonfinancial relationship exists.

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