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BETWEEN PEDAGOGICAL CONTENT KNOWLEDGE AND CONFIDENCE: A CASE STUDY OF PRONUNCIATION TRAINING AND TEACHER PREPARATION

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Abstract

While many teachers do not feel confident teaching pronunciation because of limited preparation in different areas, research has demonstrated positive effects of training in pronunciation pedagogy, as teachers who receive such training develop cognitions (i.e., knowledge, beliefs, thoughts, actions) that align with current tenets of pronunciation pedagogy. Drawing on this assertion, this paper reports the results of a qualitative case study with five pre-service teaching-English-to-speakers-of-other-languages (TESOL) teachers enrolled in a pedagogical pronunciation course as part of their teacher training program. The study's main purpose was to understand the role of training in developing content knowledge (CK) and pedagogical content knowledge (PCK) for pronunciation teaching, and how such knowledge provided confidence in pre-service teachers to address the pronunciation needs of their future students. Using four different data collection methods (reflective journals, semi-structured individual interviews, stimulated-recall individual interviews, and a focus group interview), the analysis revealed contradictions in the pre-service teachers' confidence in their CK of pronunciation teaching. While the participants perceived CK as an essential foundational subject matter

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asset necessary to develop PCK based on theoretically supported teaching techniques, they also presented a lack of confidence in their knowledge of specific segments (e.g., vowels), intonation, and specific types of connected speech like linking. The findings are discussed in terms of their implications for teacher training in pronunciation that could boost pre-service teachers' confidence in their knowledge of pronunciation teaching.
Keywords: Pronunciation teaching/pedagogy, teacher preparation, Pedagogical Content Knowledge, Content Knowledge.

Although second language (L2) pronunciation is an essential aspect of effective oral communication, research carried out in the last few decades in second and foreign language contexts indicates that L2 pronunciation is not taught systematically in classes, or that teachers do not teach pronunciation at all (Couper, 2016, 2017; Foote et al., 2011, 2016; Huensch, 2019). Part of the reason for this problem is that many teacher education programs do not prepare teachers to address the pronunciation needs of their future students systematically (Murphy, 2014). Through different survey studies, teachers have expressed the need for more training in pronunciation pedagogy. Teachers who receive such training develop knowledge of pronunciation teaching that aligns with research-based findings, which positions training in pronunciation pedagogy as essential to help teachers implement pronunciation teaching methodically (Baker, 2014; Baker & Burri, 2016; Kochem, 2022; Zárate-Sández, 2021). Such training is essential to help pre-service teachers develop foundational subject knowledge for L2 pronunciation teaching, including basic knowledge of pronunciation aspects (e.g., phonetics and phonology) and knowledge of L2 speech development theory to help teachers make appropriate decisions in class. Because of the key role of training in pronunciation pedagogy (e.g., Burri & Baker, 2021; Burri et al., 2017), a closer analysis of how pre-service teachers develop such subject knowledge for pronunciation teaching through training, and how they transform and shape this knowledge into solid pedagogical skills is still necessary to help pre-service teachers address the pronunciation needs of their students.

In this study, we analyzed how five pre-service teachers enrolled in a Teaching English to Speakers of Other Languages (TESOL) program developed basic knowledge for pronunciation teaching in a pedagogical pronunciation course, and how the course helped them shape such knowledge into pedagogical skills that could help them implement pronunciation teaching in the future. Our main purpose was to understand the key role of training in the development of knowledge and skills for pronunciation teaching, and how such knowledge and skills provided confidence in pre-service teachers to address the pronunciation needs of their future students.

Literature Review

Second Language Pronunciation Teachers

Second language pronunciation is a fundamental aspect of oral communication, and language teachers are key in the effective implementation of instructional techniques to help learners in their L2 pronunciation development. However, studies have demonstrated that language teachers find it difficult to implement pronunciation teaching in their classes, that they teach it only as a response to error correction, or that in many cases they simply do not teach pronunciation at all (Burgess & Spencer, 2000; Couper, 2017; Foote et al., 2011; 2016). Such teaching practices have been reported in ESL and EFL contexts

(Buss, 2016; Couper, 2016, 2017; Foote, 2011; Henderson et al., 2015), and more recently in the teaching of foreign languages in American universities (Huensch, 2019). Part of the reason for such problems in implementation is due to a lack of training in pronunciation pedagogy (Murphy, 2014). For instance, many of the teachers in survey studies have reported a desire to implement pronunciation instruction in their classes. However, they have also claimed lack of confidence in teaching pronunciation because of minimal or no knowledge of basic phonetics and phonology, L2 speech development theory, assessment issues, pedagogical techniques, or pronunciation features to prioritize in instruction (Couper, 2017; Foote et al., 2011; Huensch, 2019; Macdonald, 2002). More recent classroom-based studies have also pointed out the importance of training in pronunciation pedagogy to help pre-service and in-service teachers implement pronunciation teaching systematically and based on research findings, as teachers who receive such training display a variety of teaching and error correction techniques in class, or develop cognitions (i.e., knowledge, beliefs, thoughts, actions; see Borg, 2003) that align with current tenets in L2 pronunciation teaching (e.g., Baker, 2014; Baker & Burri, 2016; Kochem, 2022; Zárate-Sández, 2021).

Knowledge Base of Pronunciation Teaching

As demonstrated in studies of teachers' knowledge base of other skills like grammar, teachers' knowledge base of teaching is complex (Borg, 1998; Johnston & Goettsch, 2000; Sánchez & Borg, 2014). It is composed of interrelated factors and is developed not in one but in multiple ways (Wyatt & Borg, 2011). In mainstream education, Shulman (1987) theorized the knowledge base of teaching as a mixture of different categories, such as *Content Knowledge* (CK), or knowledge of the specific subject matter, *Pedagogical Content Knowledge* (PCK) or knowledge of how to make the subject matter accessible to learners, and specific knowledge of students and their characteristics–among other categories. In the specific case of the knowledge base of L2 pronunciation instruction, CK in the form of basic phonetics and phonology represents foundational knowledge for teachers to transform and turn it into more accessible content for learners (i.e., PCK). Such a knowledge base also involves teachers' awareness of learners' needs in pronunciation development to make pedagogically informed decisions in class (Gordon & Barrantes-Elizondo, 2024a).

Training plays a crucial role in developing teachers' cognitions of language teaching and learning (Busch, 2010), and in pronunciation teaching it helps teachers develop cognitions of teaching that align with current tenets in L2 pronunciation development. However, teachers also develop a knowledge base of pronunciation teaching in complex and unique ways (Burri & Baker, 2021). For instance, teachers who did not receive training in pronunciation pedagogy also use their previous teaching and learning experiences to build a knowledge base of teaching that responds to their learners' needs (Gordon, 2019; 2023). Even in training contexts, teachers need opportunities to experiment with ideas

in practical assignments to develop practical skills (Wyatt & Borg, 2011). As theorized by Freeman and Johnson (1998) and Johnson (1999), experience in the form of the activity of teaching itself in class is essential for the development of a knowledge base of teaching (Freeman & Johnson, 1998; Johnson, 1999). For instance, Gordon & Barrantes-Elizondo (2024a) found that teachers with no formal pronunciation training sought professional development opportunities and used their knowledge of their teaching context and their students' communicative needs to implement L2 pronunciation teaching. Burri and Baker (2021) also demonstrated through a longitudinal study that teachers who had undergone training in pronunciation teaching implemented teacher-centered practices with fewer communicative activities—a contradiction from what was studied in the training course. Similarly, Jarosz (2023) also found that a teacher who had received previous pedagogical pronunciation training implemented techniques in class that contradicted aspects of pronunciation teaching and learning studied in the training course. All these findings are evidence that teachers possess their own knowledge base of teaching, that it is complex, that it develops in unique ways, and that such a knowledge base drives the pedagogical decisions teachers make in class. It is clear then that previous teaching and learning experience as well as training play a crucial role in shaping pre-service and in-service teachers' knowledge of pronunciation teaching. However, it is still necessary to examine in detail how teachers develop specific knowledge and skills through training (e.g., CK and PCK), and how such training shapes their future selves as pronunciation professionals capable of making sound pedagogical decisions in class.

Training in Pronunciation Pedagogy

While survey studies have demonstrated that many teachers do not feel confident teaching pronunciation because of limited preparation in critical areas to implement instruction, recent research has examined the effects of training in pronunciation pedagogy in developing teachers' cognitions of pronunciation teaching. Such research has showcased the positive effects of training for both pre-service and in-service teachers in the development of knowledge of pronunciation teaching (e.g., Burri & Baker, 2021; Burri et al., 2017; Kochem, 2022; Zárate-Sández, 2021). For instance, teachers who received previous training in pronunciation pedagogy tend to implement not just controlled teaching techniques, but a variety of techniques in class that go from controlled and semi-controlled to more communicative, or a variety of different error correction techniques (Baker, 2014; Baker & Burri, 2016). Such semi-controlled and communicative techniques are necessary to help learners develop automaticity in L2 speech (Gatbonton & Segalowitz, 2005; Rossiter et al., 2010), which could result in more comprehensible (i.e., easy to understand) and intelligible (i.e., understandable) L2 speech (Derwing & Munro, 2009).

Longitudinal research in teacher training in pronunciation pedagogy has also demonstrated that teacher trainees experience growth in their knowledge of

pronunciation teaching. For example, Burri (2015) demonstrated that pre-service teachers who took a course on pronunciation pedagogy changed their beliefs about focusing on individual sounds in instruction versus implementing a more balanced approach that included suprasegmentals in instruction. Burri also demonstrated that teachers became aware of their own pronunciation aspects through this course. In a more recent study, Kochem (2022) found that teachers showcased a preference for using more semi-controlled and communicative techniques by the end of a pronunciation training course, or that teachers viewed Celce-Murcia et al.'s (2010) *Communicative Framework of Teaching Pronunciation* as a guide for implementing pronunciation teaching. Kochem's results also aligned with similar studies where participants experienced a longitudinal growth in their cognitions of pronunciation teaching to implement more research-based techniques in class. For instance, Burri and Baker (2021) found that six years after taking a pedagogical pronunciation course, a group of four teachers experienced an important growth in their cognitions of pronunciation teaching based on knowledge gained from the course as well as new experiences in different contexts. Similarly, Zárate-Sández (2021) showcased that a group of pre-service teachers changed not only their beliefs but also aligned their practices to more current tenets of pronunciation teaching after taking a pronunciation training module.

Training in pronunciation teaching also makes pre-service and in-service teachers aware of their own pronunciation and aspects that could hinder intelligibility and comprehensibility in L2 speech. For example, Buss (2017) found that pre-service teachers who took a pedagogical pronunciation course ended the course with more positive views about the role of explicit instruction in pronunciation development and more confidence to implement instruction. However, Buss stressed that the participants also became self-aware of their own limitations. For example, native-speaking participants claimed that they found it difficult to consciously identify specific prosodic features, such as stress patterns in an utterance–even though they were able to produce such patterns themselves. Additionally, nonnative-speaking participants claimed they became aware of pronunciation problems in their own L2 accents that could limit communication.

Teachers' Professional Vision

Teacher training represents a good opportunity for teachers to visualize themselves in their future teaching contexts. For instance, Burri et al. (2017b) showcased that through a pronunciation training course, a group of pre-service teachers developed not only cognitions of pronunciation teaching but also a sense of teacher identity that allowed them to visualize themselves as language-teaching professionals capable of implementing pronunciation instruction systematically (i.e., through engagement with course content and promoting tasks grounded in theory). In terms of such visualization, the conception of language teacher selves focuses on pre-service teachers' future images or visions and explains the interplay of three major domains of the self: the actual self, the

ideal self, and the ought-to self during teacher training. Higgins (1987, 1999) explained these domains under the self-discrepancy theory in which the actual self helps understand the self-representation of the current characteristics of pre-service teachers. More specifically, it refers to the CK, PCK, values, and overall skills a teacher should have for effective teaching. The ideal self conceives the self-representation of the knowledge, values, and skills the future teacher would ideally possess in their teacher role. The ought to self, in contrast, refers to pre-service teachers' representation of the knowledge and characteristics they believe they ought to possess to become ideal language teachers.

These future images of pre-service language teachers align with the notion of professional vision that is identified as a key element in teacher education (Case et al., 2021; Rahmati et al, 2019; Seidel & Stürmer, 2014). In the specific case of pronunciation teachers, such future images and professional vision align with components of the knowledge base (e.g., CK, PCK, knowledge of students' pronunciation and communicative needs based on their teaching context) that teachers need to implement pronunciation instruction that could help learners develop intelligible and comprehensible L2 speech. Such professional vision explains how knowledge possessed determines pre-service teachers' ability to notice, interpret, and predict classroom situations, which are key elements of the knowledge base of teachers when responding to learners' needs and their characteristics (Shulman, 1987). In L2 pronunciation teaching, such professional vision is seen in teachers understanding and predicting a variety of sources of pronunciation difficulties, or focusing instruction on aspects that enhance intelligibility and comprehensibility in learners. This professional vision process requires detecting relevant events in future teachers' learning (Case et al., 2021) so that they make theoretically informed decisions to ensure language learners' progress. Teachers' professional vision in teacher training, then, prompts the development of situation-specific skills where teachers show the ability to use knowledge-based reasoning to notice and interpret classroom events. Because CK and PCK are essential in the development of such situation-specific skills for teachers, in this study we sought to investigate how training influenced the development of CK, PCK, and confidence in pre-service L2 pronunciation teachers. The guiding research questions for this case study are the following:

a. What are pre-service teachers' perceptions about their Content Knowledge and Pedagogical Content Knowledge of pronunciation teaching after taking a pedagogical pronunciation course as part of their teacher training?

b. How confident about their pronunciation teaching skills do pre-service teachers perceive themselves after taking a pedagogical pronunciation course?

Conceptual Framework

We used Shulman's (1987) *Knowledge Base of Teaching Framework* to analyze how five pre-service teachers enrolled in a pronunciation pedagogical course learned the basics of teaching L2 pronunciation. Shulman's framework of knowledge base of teaching consists of seven interrelated categories of knowledge that refer to key domains in teaching, such as *Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge, Pedagogical Content Knowledge, Knowledge of Learners and their Characteristics, Knowledge of Educational Contexts, and Knowledge of Educational Ends, Purposes, and Values*. Of particular importance for our study are two specific categories: Content knowledge represents a foundational knowledge of the subject matter in teaching (e.g., theoretical knowledge of algebra, calculus, geometry, and number theory for mathematics teachers, or theoretical knowledge of chemistry, physics, and biology for science teachers). In the specific case of L2 pronunciation teachers, CK is composed of basic knowledge of phonetics and phonology of the L2, such as knowledge of voicing, place, and manner of articulation in consonants, or knowledge of rules of word and sentence stress and intonation in the L2. In addition to basic knowledge of phonetics and phonology, L2 speech development theory also represents a key component of CK, as teachers need an understanding of factors that modulate L2 pronunciation learning (e.g., age of learning, L1 influence, language experience; see Trofimovich et al., 2015) to make appropriate pedagogical decisions in class.

Closely related to CK is Pedagogical Content Knowledge (PCK), which represents teachers' ability to make CK accessible to learners to implement teaching techniques in class. This means that teachers use a variety of teaching strategies in class to transform their CK and turn it into learning opportunities in class. These teaching strategies and techniques are also influenced by other factors, such as knowledge of their students and teaching context. For instance, in L2 pronunciation instruction, this is seen in teachers' ability to use their knowledge of phonetics, phonology, and L2 speech development theory to make learners aware of how L2 pronunciation works–for example, focusing on learners' pronunciation problems that could affect intelligibility, asking learners to touch their throats to feel differences in vibration in voiced and voiceless consonants, stretching a rubber band to "feel" stressed syllables in words or phrases, or drawing intonational contours over sentences on the board to highlight differences in intonation. Despite the complexity of different categories of knowledge in Shulman's (1987) framework, and because of the dependant relationship between CK and PCK, we decided to concentrate only on CK and PCK due to the main focus of this study: that is, pre-service teachers' perceptions of their PCK and confidence to implement pronunciation instruction. We will discuss the different steps taken in our research design in the following section.

Research Design

In the present study, we followed a case study design to search for an in-depth understanding of a specific phenomenon and reality as constructed by the individuals in their social worlds (Merriam & Tisdell, 2016). In this case, our investigation sought to understand in-depth the meaning pre-service teachers attributed to their experiences while engaged with CK and PCK while enrolled in a pedagogical pronunciation class. The unit of analysis of our case study was constituted by the bounded context of this group of students while completing a pedagogical pronunciation training course. The descriptive scope of this study provided a thick description of the factors influencing the acquisition of CK and PCK and the participants' perceptions on the matter. The sampling strategy used in this case study consisted of criterion sampling (Bloomberg & Volpe, 2016) for which participants met three criteria. First, all participants had to be enrolled in the pedagogical pronunciation training course while conducting the study. Second, they also had to be pre-service TESOL teachers. A final criterion was that all participants had never taken a pronunciation training course before.

Research Context and Participants

We carried out this study in a pedagogical pronunciation training course, which was part of a TESOL program at a small state university in the American Midwest. The class was taught by the second author, and there were 16 students in it (13 undergraduates and 3 graduate students). This is a mandatory course for both undergraduate and graduate students enrolled in TESOL programs at this school. The course consisted of three integrated modules where students learned basic aspects of English phonetics and phonology, L2 speech development theory, and the pedagogical application of phonetics and phonology and L2 speech development in the teaching of pronunciation. There were two main textbooks used in the course: Celce-Murcia et al.'s (2010) *Teaching Pronunciation*, and Derwing and Munro's (2015) *Pronunciation Fundamentals*. Additionally, specific book chapters from other textbooks were also used to discuss different pronunciation teaching aspects in the form of oral presentations and class discussions (e.g., Levis et al., 2022; Murphy, 2017). The class met three days per week for 50 minutes each day, and the students participated in lectures, group discussions, practice activities, oral presentations and discussions of book chapters, materials and activity development, and micro-teaching presentations. The students also wrote reflective journals outside of class and created specific teaching activities, materials, and lesson plans that they tried in class in micro-teaching presentations. As a final project, the students created a curricular unit to teach pronunciation in a specific context.

After approval from the ethics committee of the school and an explanation about the project by the first author, a total of seven pre-service teachers volunteered and signed consent documents to participate in this study. However,

two of those participants dropped the course early in the semester, so we ended up with only five participants. To ensure confidentiality, all these participants were assigned pseudonyms throughout this study. Lucy, Anna, and Kayla were senior undergraduate students. Lucy and Anna were native speakers of English, and Kayla grew up bilingually speaking English and Spanish in the United States. Two graduate students, Chris and Jessica, also participated in the study. Jessica grew up bilingually speaking English and Spanish in the United States, and Chris was a native speaker of English who learned Spanish as a foreign language in college. Both Chris and Jessica worked as graduate teaching assistants teaching elementary Spanish classes to undergraduate students.

Data Collection and Analysis

We used four different data collection methods in this study: a semi-structured individual interview, stimulated-recall individual interviews, a focus group interview, and a set of reflective journals (Merriam & Tisdell, 2016). First, the participants had an individual in-depth interview with the first author where they discussed their perceptions, beliefs, and feelings about class content and pronunciation teaching and learning in general. All the course classes were video recorded so that the students could participate in two stimulated-recall interviews. For one of these interviews, the participants watched a video of their micro-teaching class demonstration and were invited to reflect on their decision-making processes. Their micro-teaching demonstration video was also used for a reflection assignment (see below). For the other stimulated-recall interview, the participants watched specific video clips of the course and reflected on class content and assignments, class activities, instructor lectures, group discussions, and practical tasks. The participants also completed a set of four reflective journals based on prompts provided in class. These journals were due every two or three weeks (alternating with other practical assignments) and were based on content studied in previous weeks (see Appendix). In these journals, the participants reflected and examined their attitudes, beliefs, assumptions about pronunciation teaching and learning, and their pronunciation teaching practices in the future. They also critically reflected on class readings, activities, and class content in general. For their microteaching demonstration, the participants also watched themselves on video to write a critical reflection about their strengths and weaknesses in delivering pronunciation content. Finally, the five participants discussed their perceptions about their CK and PCK to teach pronunciation in an online focus group interview with the first author through the Zoom platform. This focus group interview consisted of a multi-modal approach with various prompts for discussions, visual aids, and written notes. For instance, the participants were given prompts to reflect on class content that was easy or difficult for them to master. They were also given charts to complete simultaneously online and reflect on the suitability of activities and assignments in the course. Finally, they also reflected on different quotes from the L2 pronunciation research and pedagogical

literature where they compared what they learned in the course and the ways they would like to approach pronunciation teaching in the future.

All data from both interviews were transcribed to get a full picture of the participants' experiences and allow researchers' complete immersion. All documents designed by the participants were read carefully by the researchers to develop familiarity with the data. They were all included in the analysis to ensure a detailed construction. Data analysis of the participants' interviews, reflective journal assignments, and micro-teaching demonstration reflections followed an inductive approach which started with a first cycle coding in the form of natural coding (In Vivo) since words or short phrases from the actual language found in the data were coded (Saldaña, 2021). This first cycle was followed by code charting where summaries provided preliminary propositions. The third step consisted of a second cycle of coding where pattern codings were identified through explanations.

Findings

Our analyses yielded four main findings related to the way these preservice teachers perceived their CK and PCK of pronunciation teaching, and how confident they felt to implement pronunciation instruction after taking this course. These findings are explained in more detail below.

Content Knowledge as an Asset to Implement Pronunciation Teaching

Our first research question sought to investigate our participants' perceptions about their CK and PCK of pronunciation teaching after taking this course. Throughout the course, our participants developed an awareness of the importance of a foundational subject matter to teach pronunciation. For instance, the participants expressed that such foundational knowledge was essential to help learners develop intelligibility and comprehensibility in the future, as knowledge of basic phonetics and phonology (e.g., articulation of consonants, vowel differences, connected speech, word stress, prominence, and intonation) was seen as required to understand different spoken language processes and their repercussions in the perception/production of intelligible and comprehensible L2 speech. However, more than just basic knowledge of phonetics and phonology, the participants also demonstrated awareness of the importance of other dimensions of CK to teach pronunciation. All the participants expressed that knowledge of L2 speech development theory was vital to understanding difficulties their future students may encounter when learning pronunciation. Being aware of the way aspects like L1 background or age of learning could affect pronunciation development in L2 learners was seen as necessary knowledge to help future learners become intelligible L2 speakers. Alice, for example, stated that as a future ESL teacher who will have students from different L1 backgrounds, knowing how

their L1 could shape their pronunciation could prepare her "to help them [the students] before the issues even arise" (Alice, Reflective Journal).

Beyond basic phonetics and phonology, our participants also expressed that understanding the rationale behind pedagogical techniques made them aware of the basic skills needed to implement pronunciation. While all the participants mentioned they saw Celce-Murcia et al.'s (2010) *Communicative Framework* as a guide to teaching pronunciation, they also demonstrated awareness of the importance of each of the stages in the framework based on L2 speech development and pedagogical theories studied in the course. For instance, micro-teaching presentations in class made them aware of the need to explain phonetic and phonological aspects explicitly, provide opportunities for listening discrimination, or practice activities in a continuum of controlled and less-structured practice. Lucy, for example, mentioned that even with supporting materials like videos or speech samples, it was still necessary to spend more time explaining certain concepts to help learners "so that the students had an even clearer understanding of the form and how it connected to the video" (Lucy, Micro-Teaching Reflection).

Knowledge of technological tools (e.g., English Accent Coach, YouGlish, Audacity, Praat), theories about the role of perception in L2 speech development (e.g., Flege's 1995's SLM or Best & Tyler's 2007 PAM-L2), or research-based techniques such as high-variability phonetic training (HVPT) prompted our participants to use technological resources in assignments and projects that they could also implement in the future. This was explained by Chris in a reflective journal document:

> I now have a better understanding of the pedagogical foundations of each theory. For example, the use of high variability phonetic training (HVPT) has proven to be useful in learning a language. In other words, HVPT helps students to identify and discriminate between different speech sounds produced by a variety of speakers. As a part of my final project, I referenced HVPT sources to help formulate my project. As such, I have integrated a variety of voices into my lesson to help students familiarize themselves with different voices they may encounter when communicating in the target language (Chris, Reflective Journal).

Our participants also expressed awareness of the importance of understanding differences between constructs such as accent, intelligibility, and comprehensibility, and the theoretical rationale behind the *Intelligibility Principle* in pronunciation teaching (Levis, 2005). Kayla, for instance, expressed that knowing the distinction between accent, intelligibility, and comprehensibility was important to assist students in class in developing intelligible L2 speech. She explained that she had different ideas about accents that she changed after the course. In her future teaching career, she claimed, she will strive for intelligible L2 speech and not a native-like accent in her students. Kayla added that students should be made aware that having an accent is normal and that it does not mean

they cannot be intelligible or comprehensible. She stressed that "this idea is super important because many people share the belief that the key to speaking fluent English is by sounding like a native speaker, but this is not true at all" (Kayla, Reflective Journal). Similarly, Jessica mentioned that her knowledge of L2 speech development gave her confidence to explain to her students why L2 speech is usually accented due to aspects that constrain its production (e.g., L1 influence, age of learning). However, she claimed that it is important to guide students to pursue intelligible L2 speech by targeting pronunciation features that strengthen intelligibility and comprehensibility (Jessica, Reflective Journal).

In general terms, our participants viewed CK as important and necessary to implement pronunciation properly in their future teaching scenarios. Such an awareness of CK extended beyond basic knowledge of phonetics and phonology but also included other dimensions of knowledge needed to best serve their students in class, such as knowledge of L2 speech development, and theoretical knowledge behind common pedagogical techniques. The participants' perspectives about the potential benefits of gaining CK suggested that they became aware of its importance. Not only that, but they also perceived CK to be an opportunity to become a trustworthy reference that could position them as knowledgeable professionals. In fact, this CK was also a source of confidence to build pronunciation teaching skills. Such confidence, however, also presented specific contradictions that we showcase in the following sections.

Content Knowledge and Confidence about their Future Perception as Language Teaching Professionals

Our participants expressed how being knowledgeable about a foundational subject matter (i.e., CK) provided confidence to see themselves as future pronunciation teaching professionals. For instance, they mentioned that this new knowledge gave them skills to notice and predict specific classroom situations in pronunciation teaching. Chris, for instance, explained that one of the class assignments guided him to connect what he learned in class to what he could expect in a future teaching situation:

> I had to really think about what I was doing, how it related to the students, how I can make it accessible for them and how it can be inclusive for students of very varying proficiency levels. It was very applicable to what most of us will be doing in our future context as teachers (Chris, Semi-Structured Interview).

In a sense, our pre-service teacher participants viewed CK as an essential mechanism that could help them become the best teaching version of themselves for the benefit of their students. Lucy explicitly mentioned, "I want to be the best teacher I can be, so that has increased my curiosity about these topics [L2 speech learning theory and technology and L2 pronunciation] and others within the course" (Lucy, Reflective Journal). Closely related to this idea, Alice shared how

pronunciation teaching was not a common topic developed in other teaching methods courses and how it is "often brushed to the side." She further elaborated that "as a future educator, I want to be prepared to help my students reach their full potential" (Alice, Reflective Journal). Our participants viewed this course as a learning opportunity that they identified and valued. For instance, Chris reinforced this sense of accountability by sharing the negative consequences of not having the necessary CK to address their future students' learning needs. To this effect, he shared that "if I, as a future teacher, I don't have these aspects in mind [factors that affect comprehensibility and intelligibility], students might not be able to be intelligible, and they might convey the wrong message to their audience" (Chris, Stimulated-Recall Interview).

On a different note, CK was also an opportunity to reinforce our participants' confidence in their current and future teaching decisions. Being immersed in a class that focused exclusively on pronunciation teaching confirmed career decisions for these pre-service teachers. Such was the case of Lucy, who shared in a reflection that "the factor that has influenced me the most when learning about these topics is probably my future career ideas of becoming a teacher of emergent bilingual students" (Lucy, Reflective Journal). Similarly, Jessica shared: "throughout this course I came to the realization that I've been interested in phonetics and pronunciation since before I even knew what that meant" (Jessica, Reflective Journal). Even though there was evidence that our participants recognized the key role of CK in their teaching, there were also instances when they were not certain of their abilities to guide students to succeed.

Limited Confidence in Specific Segmental Knowledge and Phonological Processes

Although our participants were aware of the importance of CK, they also expressed a lack of confidence in their knowledge of specific phonological processes, segments such as vowels, or intonation types. For instance, all five participants mentioned that they struggled with learning about vowels more than consonants. Alice mentioned in a reflective journal that she felt confident with her knowledge of consonants, but that it was not the same with vowels:

> For vowels I feel less confident overall, I think I struggle to recognize the difference between the vowel sounds. I feel most confident with the diphthongs and the roundness of the vowels. Overall I'm just not as confident at telling the difference between some of the vowels like /ʌ/ and /ə/ (Alice, Reflective Journal).

Similar points were made by other participants like Jessica and Chris in reflective journals where they expressed that some vowels were more difficult to distinguish because they were very similar and required their full attention to perceive their differences. They also mentioned that vowels, in general, were more difficult to teach than consonants. Lucy even expressed that her own dialect of

English probably played a role in not being able to distinguish some of the vowel differences: "I think especially here in the Midwest, a lot of our vowels sound the same, so it can be difficult for native-Midwestern-English speakers to distinguish all of those different vowels and sounds" (Lucy, Semi-Structured Interview).

Our participants also expressed they struggled to distinguish different types of connected speech like linking and assimilation. While they expressed they understood these concepts and phonological processes, distinguishing one process from another, and using the proper terminology and techniques to explain or teach different types of connected speech were perceived as challenging. Lucy summarized this feeling by stating:

> The only aspect I struggle with in this area is remembering the distinction between the different types; I can recognize it is connected speech, but struggle with the specifics. Linking is one of the easiest ones for me to identify. I am not 100% sure how I would teach all of the aspects of connected speech, but I think the examples I have seen from my classmates are a good start" (Lucy, Reflective Journal).

Jessica also mentioned that while she understood the concept of linking she did not feel quite confident to teach it yet. Chris even further explained why this lack of confidence could be problematic in a future teaching situation:

> It is hard for me to identify all areas [types] of connected speech, and also in some cases, hard for me to identify why they are considered connected speech. For example, breaking down thought groups to note the different connected speech phenomena has been challenging, especially because there are so many examples to identify within a thought group. For this reason, it could be challenging to explain to my future students (Chris, Reflective Journal).

Even though knowledge of specific segmentals and connected speech posed challenges for our participants, their general knowledge of prosodic aspects was described as more positive. However, there were contradictions in such knowledge in that some aspects were easier to understand than others. This is described in the following finding.

Contradictions in their Knowledge of Suprasegmental Aspects

One contradictory aspect expressed by all our participants was their confidence in their knowledge of suprasegmentals. The participants expressed confidence in their understanding of features like word stress, prominence, and rhythm. While some of these aspects were not easy to understand at first, and the participants expressed that segmentals tended to be easier than suprasegmentals, their knowledge of prosody seemed more solid by the end of the course than at the beginning. Such knowledge was reinforced through understanding and awareness of the key role of prosody in the perception and production of

intelligible L2 speech. Jessica and Chris, for example, mentioned that they felt quite confident not only in their new knowledge of suprasegmentals but also in their ability to teach them. Similarly, all the participants also mentioned a new awareness of the way prosodic aspects worked in the language, which they did not necessarily think about before taking the course as it was just part of their native language. Alice summarized these aspects in a reflective journal:

> I never thought of English as a language that uses stress and intonation. It's something that I've never had to think about while speaking [...] Learning about the rules of prominence, and how questions work or how certain words will have more stress than others made a lot of sense to me. I would say that this is probably my most comfortable area that we've gone over so far (Alice, Reflective Journal).

It is necessary to mention that this confidence in their knowledge of suprasegmentals was also reinforced through other means. For example, exercises in class where the participants had to analyze authentic speech were useful to become aware of how prosody worked. Such exercises consisted of analyzing pauses and thought groups first, and then more specific prosodic aspects. Kayla stated that going over the scripts from dialogues and videos was very helpful in becoming aware of different prosodic features (Kayla, Reflective Journal). Similarly, the participants mentioned that knowledge of suprasegmentals was also reinforced through materials development, designing teaching activities, or implementing micro-teaching presentations in class where they had to align lesson plans and activities with the theory studied previously. Lucy, for instance, discussed the importance of using authentic materials (e.g., a video clip from a sitcom) in a combination of inductive and deductive presentation to introduce learners to the concept of sentence stress in a micro-teaching presentation:

> I thought it was a good example of the topic [the video], and I also thought it was like a good way to have an authentic example to put it into context [...] it was presenting materials first, but not showing the form right away. So then they [the students] just watched the video, and I told them what to look for. And then they watched it again. So then we talked about it in class and that was a good thing to do, knowing how to provide explicit explanations in a creative way: first using inductive presentation by using authentic language, and then explaining the rules deductively (Lucy, Stimulated-Recall Interview).

While all the participants expressed confidence in their knowledge of suprasegmentals, one specific prosodic aspect posed challenges for all of them: intonation. Just like connected speech, the difficulties ranged from not perceiving differences in intonation or not knowing why a specific type of intonational pattern was being used. For example, Lucy stated that she had difficulty identifying and even hearing the difference in intonation types. She explained, "I feel like I can produce a rising intonation or falling intonation myself, but I can't always identify

it in a dialogue" (Lucy, Reflective Journal). She went on to further explain these issues in a stimulated-recall interview after watching a clip from the class where differences in intonation were being discussed:

> It [intonation] was still pretty difficult for me, and it still is, we really didn't learn this concept that long ago. It's still kind of what I'm not super sure about. I think because it really depends on the context, and it's hard to emulate contexts all the time, I guess. So it's still like something that is kind of difficult for me [...] it's hard to just identify when it's happening. It's hard to identify like sometimes why it is what it is, like I might think it's something because of this reason, and then my partner was thinking the opposite. So it was just hard to apply that knowledge right away (Lucy, Stimulated-Recall Interview).

Another participant, Chris, also stated that even though his knowledge of intonation improved throughout the course, he still did not feel quite confident in identifying different intonation patterns. However, his explanations about this difficulty in a reflective journal showed discrepancies between his actual knowledge and what he perceived as lack of knowledge. He explained:

> Although this area saw major growth with more practice, it is still a bit fuzzy in certain cases. In class, we learned that many textbooks say that "wh-" questions always end with falling intonation, however, this is not always the case. Especially in instances where you are asking for clarification or have doubts, "wh-" questions can certainly end with rising intonation, as you are seeking more information or are confused about the message. Although this area has improved significantly in my time over this course, I would still like to have more practice and confidence in identifying intonation within different types of speech (Chris, Reflective Journal).

In general terms, our participants gained confidence in their knowledge of basic content to teach pronunciation, and they developed awareness in the course of how such basic CK is important to implement pronunciation in future teaching situations. However, there were key contradictions in their knowledge of pronunciation content and teaching skills. These aspects are discussed further in the next section.

Discussion

While it has been documented that many teachers do not receive enough training in pronunciation pedagogy (e.g., Murphy, 2014), and many teachers in different contexts have expressed a desire to know more about pronunciation teaching (Couper, 2016, 2017; Foote et al., 2011; Huensch, 2019), this pedagogical pronunciation course provided evidence that training helped these pre-service teachers increase their knowledge and awareness of necessary aspects to implement pronunciation instruction systematically in future teaching

situations. A closer analysis, though, demonstrated not only important gains as a result of training but also contradictions in what our participants learned and how prepared and confident they felt to teach pronunciation by the end of the course. Through this course, the five pre-service teacher participants in our study developed an awareness of the significance and essentialness of CK as a foundational subject matter to develop PCK. While there was an awareness that knowledge of basic aspects related to phonetics and phonology was an essential asset in teaching pronunciation–a common sentiment expressed by teachers who want to know more about pronunciation teaching (Couper, 2016, 2017; Foote et al., 2011; Huensch, 2019), the participants in this study also demonstrated that knowledge of other elements was equally necessary to implement pronunciation instruction according to the needs of their future learners. For instance, knowledge of L2 speech development theory was perceived as key to understanding possible challenges their learners may encounter in the future, and how to address such challenges based on theoretically-supported teaching techniques. These results align with previous studies that have demonstrated that training is key to help pre-service teachers change language teaching and learning assumptions to beliefs and notions based on theoretical grounds (Busch, 2010).

The participants expressed that understanding the partially independent relationship between accent and intelligibility (Munro & Derwing, 1995), or how factors such as L1 background and age of learning may modulate pronunciation development (see Trofimovich et al., 2015) were necessary dimensions of CK for teachers to implement pronunciation in class that could help learners develop intelligible and comprehensible L2 speech. Participants like Jessica, Lucy, and Kayla expressed that this dimension of CK is necessary to address pronunciation problems in their future students or predict certain difficulties that could arise in class. They also mentioned the importance of making learners aware that L2 speech could be intelligible despite an L2 accent. As such, developing this awareness of different dimensions of CK necessary to implement pronunciation instruction (e.g., phonetics, phonology, L2 speech development) also signaled a future awareness of L2 learners and their needs, which is a necessary component of teachers' knowledge base (Shulman, 1987), and it has been demonstrated to be key in the knowledge base of pronunciation teachers (Gordon, 2019, 2023).

An awareness in pre-service teachers about the essentialness of different dimensions of CK directly addressed the importance of acknowledging intelligibility when teaching pronunciation. First, implementing pronunciation teaching based on L2 speech development theory represents a more realistic view that aligns with well-known tenets in pronunciation pedagogy, such as the Intelligibility Principle and the partially-independent relationship between intelligibility and accent (Levis, 2005; Munro & Derwing, 1995). Second, such awareness in pre-service teachers like the participants in this study represents an important move away from pervasive negative ideologies like native-speakerism (Holliday, 2006), as the purpose of pronunciation teaching should be mutual

comprehensibility and intelligibility among different speakers without focusing on a native accent.

The participants in our study also viewed CK as a vital foundation to start building PCK of pronunciation teaching. For instance, all the participants mentioned they perceived Celce-Murcia et al.'s (2010) Communicative Framework of Pronunciation Teaching as a useful template or guide for implementing pronunciation instruction—a result also observed in previous research (Kochem, 2022). However, more than just a tool or a formula, they considered that understanding the theoretical rationale behind each one of the stages in the framework was crucial to helping learners develop L2 pronunciation properly. For instance, while the participants recognized that the framework was built based on theoretical grounds to guide explicit instruction, they recognized that their knowledge of phonetics and phonology, or L2 speech development theory were also necessary to implement the framework properly (see Lucy's comments about explicit instruction). Additionally, for these pre-service teachers, understanding the differences between focus on form and focus on meaning in instruction was seen as key to implementing instruction where their future learners could focus not only on accurate L2 speech production but also on more spontaneous production and communicative activities. This is a key finding, as beliefs and assumptions developed in teacher training and grounded on L2 acquisition theory may prompt teachers to make theoretically motivated pedagogical decisions in class (Busch, 2010). Additionally, this distinction made by the participants between different types of activities within a continuum of controlled and spontaneous speech is important because it aligns with previous research findings that demonstrated that L2 learners need to practice forms not only under controlled conditions but also in semi-controlled and communicative activities to automatize such forms and gain fluency–an important component of comprehensible L2 speech (see Gatbonton & Segalowitz, 2005; Rossiter et al., 2010). Additionally, understanding the theoretical rationale behind the framework (Celce-Murcia et al., 2010) is important because it is a first step in giving participants tools to start building their own PCK (Borg, 2011; Wyatt & Borg, 2011). Specifically, in L2 pronunciation teaching, such PCK with a strong theoretical basis is key for implementing explicit instruction systematically in class, which is essential knowledge for teachers to have given the benefits of explicit instruction in the development of L2 pronunciation (Lee et al., 2015; Saito & Plonsky, 2019).

It is also important to mention that our participants considered certain activities in class useful to start building their PCK. For instance, writing lesson plans and creating materials provided the participants with a valuable experience they could use in future teaching scenarios. All the participants mentioned that micro-teaching simulations were crucial to start building their own teaching skills or to reinforce concepts learned before. Designing activities, materials, and lesson plans, or implementing teaching simulations in class allowed these pre-service teachers to make useful connections between theory and practice. For

example, learning about the role of perception in pronunciation learning (e.g., Thomson, 2022), technological tools for pronunciation teaching (e.g., Thomson, 2023), or what common models of L2 speech development say about perception (e.g., Best & Tyler, 2007; Flege, 1995) prompted the participants to create and implement activities based on theoretical principles (see Chris' comments about using HVPT principles in the design of materials). Transforming L2 speech development theory into practical applications in the form of different teaching activities that these pre-service teachers could test in class was of the utmost importance for them to use CK and start shaping it into PCK. As demonstrated previously, teacher training courses can help learners develop PCK through certain structured activities in courses, such as theoretical grounding, opportunities to practice and implement teaching as in tutoring and micro-teaching simulations, and opportunities to reflect on their own teaching decisions (Borg, 2011; Mann, 2005; Wyatt & Borg, 2011). Additionally, testing their activities through micro-teaching presentations provided a context to start laying the groundwork of their own PCK, as teachers build part of their knowledge base through the act of teaching (Freeman & Johnson, 1998).

Our pre-service teacher participants recognized the value of this foundational knowledge of pronunciation teaching to see themselves as professionals in their own right. In general, they connected their current pre-service teacher roles with future expectations of what it means to be a good pronunciation teacher. This finding aligns with previous results that have demonstrated that training in pronunciation teaching helps pre-service teachers develop not only cognitions of pronunciation teaching but also a sense of teacher identity as language professionals in their own right (Burri et al., 2017b). Although the participants acknowledged differences between teaching in a real classroom versus teaching in a simulated scenario, they emphasized the importance of these experiences to be able to notice and interpret potential teaching and learning incidents that, eventually, would help them support their learners. While the ability to support student learning properly requires pronunciation teachers to have strong CK, confidence, and cognitions of pronunciation teaching, teachers must have the necessary skills to make assertive decisions when several simultaneous events compete for their attention at the same time (Seidel & Stürmer, 2014). This was the particular case of these pre-service teachers who envisioned themselves being immersed with diverse learners in multilingual classrooms, as they constantly referred to the demands of teaching learners with different linguistic backgrounds. Such finding aligns with previous research that has demonstrated that pre-service teachers visualize their future selves with characteristics (e.g., CK, PCK, values, and teaching skills) that teachers need for effective teaching (Higgins, 1987, 1999). For instance, the influence of students' L1 and age of learning were tightly connected to the need to be cognizant of how such factors could affect learners' pronunciation development to become intelligible L2 speakers. Consequently, awareness and knowledge of these factors could help them predict which pedagogical practices could be more beneficial for their

students. Being able to imagine ways to effectively support learners is part of the notion of professional vision that is key for pre-service teachers to grow into the future teacher selves that they aspire to be (Case et al., 2021; Rahmati et al, 2019; Seidel & Stürmer, 2014).

While the pre-service teacher participants in our study felt more confident in how to teach pronunciation after taking this course, there were also contradictions in their confidence in their knowledge of both segmentals and suprasegmentals. Although they expressed difficulties and confusion understanding specific segmentals (vowels), by the end of the course they expressed feeling more confident in their knowledge of segmentals than their knowledge of suprasegmentals. This confidence was also reflected in their knowledge of strategies to teach such segmentals. However, it is necessary to mention that such mastery of segmental content also presented specific challenges for these pre-service teachers. For instance, dealing with specific metalinguistic terminology such as different names for places and manners of articulation for consonants proved to be challenging for the participants at first. Perceiving acoustic quality differences in vowels or understanding vowel production also posed difficulties. Additionally, connected speech was also challenging content. While the participants claimed they understood different connected speech features, distinguishing different types of linking (e.g., resyllabification vs. vowel-consonant-vowel sequence with a glide) or noticing examples of progressive, regressive, or coalescent assimilation were also difficult for the participants not only to name but also to identify both in visual (e.g., through scripts) and audio form.

It is necessary to further analyze the challenges faced by these pre-service teachers in terms of mastery of segmental and connected speech content and their possible repercussions in implementing pronunciation instruction. First, while experienced teachers find ways to transform their CK (e.g., phonetic and phonological content) and make it accessible for learners in class (Gordon, 2019), knowledge and mastery of basic phonetic and phonological metalanguage are necessary for teachers to be able to transform such CK into more accessible and manageable content to create learning opportunities for learners. After all, teachers transform knowledge of the language and use metalinguistic terminology to draw learners' attention to language forms and provide explanations (Andrews, 1998; Basturkmen et al., 2002). However, drawing learners' attention to language forms and providing explanations are only possible as long as teachers have a basic foundational knowledge of their subject matter that they can transform and mold into more accessible content to create learning opportunities for learners (Gordon & Segura Arias, 2024b). It is also necessary to mention that in addition to struggling with concepts, specific language features also posed difficulties for native-speaking pre-service teachers to perceive in the language (see Kayla's comments about her difficulties understanding vowel differences, or Lucy's comments about her own dialect influencing the perception of sounds). Difficulties among native-speaking pre-service teachers perceiving features

of their own language have also been documented before in pedagogical pronunciation training (Buss, 2017).

Our participants' knowledge of suprasegmentals presented specific contradictions. On the one hand, this course was eye-opening for the participants not only in becoming aware of the nature of suprasegmentals in speech perception and production but also in their key role in intelligibility and comprehensibility in L2 speech as documented in previous research (e.g., Field, 2005; Hahn, 2004). Additionally, our results proved that training in pronunciation pedagogy could make pre-service teachers aware of the variety of high-value L2 speech features necessary for intelligibility and comprehensibility (e.g., suprasegmentals and connected speech), as also documented in previous research (Burri, 2015). This awareness about suprasegmentals is important because, despite their key role in intelligibility and comprehensibility, many teachers do not necessarily implement these features in pronunciation teaching (Foote et al., 2011, 2016). On the other hand, the participants claimed that they did not feel very confident in their knowledge of suprasegmentals or how to identify specific features in the speech signal. One prosodic feature that posed challenges was intonation. Most of our participants claimed they could produce different intonational patterns and that they understood their functions. However, identifying different intonational patterns in other speakers or audio materials tended to be challenging. As discussed before, distinguishing specific language features of their language can pose difficulties for some teachers (Buss, 2017). Additionally, a closer look at Chris' and Lucy's comments about their understanding of intonation demonstrated that their knowledge of this feature was not as poor as they considered it to be– see their comments about intonation being context-dependent. Therefore, it is possible that teachers' CK and PCK of suprasegmental aspects such as intonation may improve with teaching experience once they get to implement their own explanations and practices in their future teaching contexts. As demonstrated by previous research, part of teachers' knowledge base of teaching is shaped through their teaching experiences in the classroom (Freeman & Johnson, 1998), and these first experiences in their teacher training programs represent a key foundation to develop their practical knowledge later in their careers (Borg, 2011; Mann, 2005; Wyatt & Borg, 2011).

It is important to mention some of the possible sources of our participants' lack of confidence in their knowledge of certain types of content. One possible reason is their lack of contact with real teaching experiences. Only two of the participants had some teaching experience when they enrolled in the course (Jessica and Chris, both graduate teaching assistants). Although the micro-teaching presentations in class provided opportunities to experiment with teaching techniques, the participants expressed that they felt the need for real-life teaching scenarios to be sure how much they knew in terms of pronunciation content and pronunciation teaching skills. As such, their knowledge-based reasoning was strongly influenced by their desire to become the ideal teacher their future students will need–influenced by their awareness of their own

knowledge of pronunciation content and how to develop it in their future classes. This awareness comes with participants reflecting on their lack of experience in real classrooms and the difference between being the learner and being the teacher. In this sense, the participants expressed an understanding that the course was structured to prepare them to be pronunciation teachers, but that the real application of the knowledge gained in the course would depend on their specific teaching context–which at times could make matters more complicated for not knowing the exact type of learners they will encounter in the future.

Conclusion

The results of this investigation reinforce the well-known notion that pedagogical training is fundamental to helping teachers develop the necessary knowledge and skills to implement L2 pronunciation instruction. While it is commonly known that many English language teachers do not receive this type of training in their teacher education programs (Murphy, 2014), previous research has indicated that those who undergo pedagogical training in L2 pronunciation develop cognitions of pronunciation teaching that align with research-based findings (e.g., Baker, 2014; Burri & Baker, 2021; Jarosz, 2023; Kochem, 2022; Zárate-Sández, 2021). As such, the pre-service teachers in this study not only learned CK (e.g., phonetics & phonology) that will be essential to implement pronunciation instruction in their future teaching contexts but also other forms of CK that they should take into consideration to make proper pedagogical decisions that could benefit their future learners, such as knowledge of L2 speech development and pedagogical theories. Providing pre-service teachers with this type of CK could boost their confidence in implementing pronunciation instruction based on current tenets of pronunciation pedagogy. This is important because such confidence in their knowledge base could allow teachers to implement well-informed pronunciation content based on the needs of their students and use methodologies that align with current L2 speech development and pronunciation pedagogy.

Based on the way the preservice teachers in this study perceived their knowledge of pronunciation teaching, and their confidence (or lack of it) in such knowledge, we believe it is important that training in pronunciation pedagogy address different dimensions of CK that include not only basic aspects of phonetics and phonology, but also a theoretical foundation of L2 speech development and pedagogical principles grounded on such theory (e.g., Celce-Murcia's 2010 Communicative Framework of pronunciation teaching, Levis' 2005 Intelligibility Principle; or general foundations of L2 speech development; see Derwing & Munro, 2015). At the same time, we believe teachers in training must be able to make connections between theory and practice to start developing their own PCK. For instance, designing classroom activities, teaching materials, lesson plans, or implementing teaching simulations are all necessary training components that could help preservice teachers use CK as a basis to start shaping

PCK for pronunciation teaching. However, as evidenced by the lack of a more experiential component in this course, it is important to mention that such an element could also boost preservice teachers' confidence in pronunciation teaching by experiencing more authentic teaching situations, such as observing classes, teaching an actual pronunciation lesson, or implementing a tutoring project. This type of experiential learning could help pre-service teachers feel confident about their pedagogical decisions in their transition to their own professional practice in real scenarios.

This course also provided an opportunity for these pre-service teachers to envision their future teacher selves. As such, the content provided in class made our participants aware of the content and skills they will need in the future to address their students' needs. We believe it is necessary for pre-service teachers to make such a connection between the content studied in class and how it could address possible challenges they will encounter in their future teaching contexts in terms of learners' pronunciation needs (e.g., communication needs in an academic setting, interacting with L2 speakers from different L1 backgrounds, communication in a specific professional meeting, etc.). We believe that a more intentional component about their future selves could be beneficial for preservice teachers in a pedagogical pronunciation training course. Giving preservice teachers opportunities to visualize their future selves as pronunciation teachers could make them aware of the basic knowledge and skills for pronunciation teaching acquired in the course and how such knowledge and skills are essential to help learners in future teaching situations. Reflective activities and discussions could develop awareness in preservice teachers of the knowledge needed for pronunciation teaching that could bridge the gap between their current and future selves.

While our participants felt more confident in teaching pronunciation by the end of this course, they also presented different levels of confidence in their knowledge and how to implement such pronunciation content in future teaching scenarios. Unsurprisingly, the participants found segmental content easier to understand and teach than suprasegmental and connected speech content. However, it is important to notice that such confidence in their knowledge and skills to teach suprasegmentals and connected speech improved by the end of the course, and that there were contradictions in what they expressed about their knowledge of this content. As mentioned previously, it is possible that a more practical component as part of the course could give learners more confidence to develop skills to implement this pronunciation content. It is also possible that their own future teaching experiences will boost their confidence based on the foundational knowledge already developed in the course.

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APPENDIX

Pronunciation Pedagogical Course
Course Schedule

WEEK	DAY	TOPIC & ACTIVITIES	EVALUATION
1	Jan 18	-Course Introduction -Derwing & Munro, Ch. 1	
1	Jan 20	-Derwing & Munro, Ch. 1 (continued)	
2	Jan 23	-Celce-Murcia et al. (p. 41-49): A Communicative Framework for Teaching Pronunciation	
2	Jan 25	-Celce-Murcia et al. Ch. 3: The Consonant System	
2	Jan 27	-Celce-Murcia et al. Ch. 3: The Consonant System (continued)	
3	Jan 30	-Celce-Murcia et al. Ch. 3: The Consonant System (continued)	**Reflective Journal 1 due (The Intelligibility Principle & The Communicative Framework)**
3	Feb 01	-Celce-Murcia et al. Ch. 3: The Consonant System (continued)	
3	Feb 03	**-Micro-Teaching Demonstration: Teaching Consonants I** **-Micro-Teaching Demonstration: Teaching Consonants II**	**Assignment 1 due (Teaching Consonants; Lesson Plan & Materials)**
4	Feb 06	-Celce-Murcia et al. Ch. 4: The Vowel System	
4	Feb 08	-Celce-Murcia et al. Ch. 4: The Vowel System (continued)	
4	Feb 10	-Celce-Murcia et al. Ch. 4: The Vowel System (continued)	**Micro-Teaching Reflections Due** **Final Project Proposal Due (Curricular Unit)**

5	Feb 13	-Celce-Murcia et al. Ch. 4: The Vowel System (continued)	
5	Feb 15	-Micro-Teaching Demonstration: Teaching Vowels I -Micro-Teaching Demonstration: Teaching Vowels II	
5	Feb 17	-Celce-Murcia et al. Ch. 5: Connected Speech, Stress, and Rhythm	**Reflective Journal 2 due (Knowledge of Vowels & Consonants)**
6	Feb 20	-Celce-Murcia et al. Ch. 5: Connected Speech, Stress, and Rhythm (continued)	
6	Feb 22	-Celce-Murcia et al. Ch. 5: Connected Speech, Stress, and Rhythm (continued)	
6	Feb 24	-Micro-Teaching Demonstration: Connected Speech -Micro-Teaching Demonstration: Word Stress and Rhythm	
7	Feb 27	-Celce-Murcia et al. Ch. 6: Prominence and Intonation in Discourse	**Assignment 2 due (Suprasegmentals & Connected Speech—lesson plan & materials)**
7	Mar 01	-Celce-Murcia et al. Ch. 6: Prominence and Intonation in Discourse (continued)	
7	Mar 03	-Micro-Teaching Demonstration: Prominence -Micro-Teaching Demonstration: Intonation	Micro-Teaching Reflection due
8	Mar 06	- Derwing & Munro: Ch. 3: A pedagogical perspective on L2 phonetic acquisition	
8	Mar 08	- Derwing & Munro: Ch. 3: A pedagogical perspective on L2 phonetic acquisition (continued)	

8	Mar 10	**Oral Presentations:** -Taylor de Caballero & Schneider (The Color Vowel Chart: Teaching Pronunciation to Beginning Level Adults) -Jones (Teaching Prosody to ESL middle schoolers: Pre-Teens and Teens)	Micro-Teaching Reflections due
--	Mar 13	No Class -- Spring Break	
--	Mar 15	**No Class -- Spring Break**	
--	Mar 17	**No Class -- Spring Break**	
9	Mar 20	-Celce-Murcia et al. Ch. 7: Pronunciation in the language curriculum	
9	Mar 22	-Celce-Murcia et al. Ch. 7: Pronunciation in the language curriculum (continued)	
9	Mar 24	-Celce-Murcia et al. Ch. 7: Pronunciation in the language curriculum (continued)	
10	Mar 27	-Derwing & Munro: Ch. 4: Pronunciation errors and error gravity	**Reflective Journal 3 due (Knowledge of Suprasegmentals & Connected Speech)**
10	Mar 29	-Derwing & Munro: Ch. 5: Pronunciation instruction research	**Final Project First Draft Due**
10	Mar 31	Oral Presentations: -Sardegna & McGregor (Oral Communication for International Graduate Students and Teaching Assistants) -Levis & Echelberger (Ch. 2: Integrating Pronunciation into Language Instruction)	
11	Apr 03	-Celce-Murcia et al. Ch. 8: Testing and evaluation (Read Derwing & Munro, Ch. 6 for background)	

11	Apr 05	-Celce-Murcia et al. Ch. 8: Testing and Evaluation (Read Derwing & Munro, Ch. 6 for background) (continued)	
11	Apr 07	- Derwing & Munro, Ch. 8: Social Aspects of Accent	
12	Apr 10	-Celce-Murcia et al. Ch. 9: Techniques, Tools, and Technology - Derwing & Munro Ch. 7: Technology in L2 Pronunciation Instruction	
12	Apr 12	-Celce-Murcia et al. Ch. 9: Techniques, Tools, and Technology (continued) - Derwing & Munro Ch. 7: Technology in L2 Pronunciation Instruction (continued)	
12	Apr 14	**Oral Presentations:** -Grantham O'Brien (Ch. 5: Making the Teaching of Suprasegmentals Accessible) -Brinton et al. (Ch. 8: Beyond Controlled, Guided, and Free Practice: Teaching Pronunciation Effectively via a Coaching Model)	Reflective Journal 4 (Knowledge of L2 Speech Development Theory)
13	Apr 17	-Celce-Murcia et al. Ch. 10: Pronunciation and Listening	
13	Apr 19	-Celce-Murcia et al. Ch. 10: Pronunciation and Listening (continued)	
13	Apr 21	**Oral Presentations:** -Tergujeff (Ch. 12: Pronunciation Teaching in K-12 EFL Settings) -Pickering & Huang (Ch. 14: Teaching Pronunciation in the Context of Multiple Varieties of English)	
14	Apr 24	**Oral Presentations:** -Couper (Ch. 9: Effective Feedback for Pronunciation Teaching) -Sonsaat-Hegelheimer & McCroklin (Ch. 15: Research-Informed Materials for Pronunciation Teaching)	**Assignment 3 due (Integrating Segmentals & Suprasegmentals; Lesson Plan & Materials)**

14	Apr 26	-Celce-Murcia et al. Ch. 12: The Sound System and Spelling	
14	Apr 28	-Celce-Murcia et al. Ch. 12: The Sound System and Spelling (continued)	
15	May 1	Final Presentations (Final Project)	
15	May 3	Final Presentations (Final Project)	
15	May 5	Final Presentations (Final Project)	**-Final Project Due (Curricular Unit)**