LEARNING TO TEACH L2 PRONUNCIATION VIA ONLINE AND BLENDED ON-CAMPUS COURSEWORK

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Abstract: This article focuses on the preparation of second language (L2) teachers in a Teaching English to Speakers of Other Languages (TESOL) program offered in Australia. Specifically, it explores the learning development of student teachers in learning how to teach English pronunciation pedagogy to L2 learners, either via online only or blended on-campus. Thirteen student teachers (five asynchronous online-only and eight blended on-campus) participated in the study. Data sources included: responses to online quizzes assessing student-teachers' knowledge of English pronunciation; their final assignments; Moodle discussion forum postings; Moodle participation analytics; and narrative frames comprising participants' accounts of their personal experiences in learning course content. Overall, findings indicated that the student teachers' knowledge and understanding of how to teach L2 pronunciation was enhanced regardless of which mode of delivery they took. Findings further showed that the Moodle books played a particularly important role for both groups of students in learning course content.

Pronunciation is typically viewed as the usage or misuse of segmentals (consonant and vowel sounds). However, pronunciation is more than this in second language (L2) teaching. It also includes the use of suprasegmentals, specifically stress, rhythm, and intonation. Any one of these features may interfere with successful and intelligible (clear) communication, necessary in most aspects of everyday society. Thus, not only may some L2 speakers have the same issues with speaking anxiety (Jee, 2022) that monolingual speakers have (Ledford et al., 2023), but they may also experience issues related to unintelligible speech that may both exacerbate their speaking anxiety and interfere with getting their message across phonologically. This often results in speakers with foreign accents being perceived as less competent (e.g., Teló et al., 2022) and encountering racial discrimination (e.g., McDonough et al., 2022).

Nonetheless, there is a reluctance of teachers worldwide to teach pronunciation and/or give feedback on their L2 learners' pronunciation (e.g., Baker, 2014; Macdonald, 2002). This may be due to a variety of factors, including lack of training in phonology and/or pronunciation pedagogy (e.g., Couper, 2017; Murphy, 2014), lack of confidence to teach pronunciation (Baker,

2014; Couper, 2017; Foote et al., 2011), and fears of imposing on the speakers' identity (Macdonald, 2002). This is problematic because recent research has demonstrated the importance of intelligible speech to the learners (e.g., Burri, 2023; Dao, 2018) who value being understood when speaking in front of an audience or in other professional settings. Many of these speakers desire to obtain a high level of clear pronunciation, even native-speaker pronunciation, despite modern advocacy de-prioritising such goals in L2 English classrooms (Thomson, 2014). Contemporary L2 teaching thus places great importance on intelligibility, seeking to support learners in putting forth their ideas and arguments successfully by focusing on speaking clearly.

These issues highlight a need for teachers who can support their L2 students to address pronunciation challenges they face. Teachers need to know how to integrate pronunciation instruction into their lessons and understand "how English pronunciation is structured, why it is so varied, and how it changes depending on discourse context" (Reed & Levis, 2015, p. xii) Taken together, this constitutes highly technical linguistic knowledge that teachers need to both understand conceptually and apply in practice. This enables them, first, to identify which specific features of pronunciation L2 learners may be using inappropriately, and then to help learners make the necessary changes to improve their overall intelligibility. Simply speaking, teachers require both subject matter content knowledge (pronunciation) and pedagogical content knowledge (how to teach pronunciation) (Baker & Murphy, 2011). Both areas subsume vast amounts of knowledge, each easily necessitating a standalone course (e.g., a phonetics course in an English linguistics program). Rarely, though, if ever, can TESOL programs devote more than a single course to this overarching topic area.

Despite its importance and the clear need for pronunciation teaching, relatively few L2 teacher education programs have courses devoted to pronunciation (Murphy, 2017). As a result, there is a notable dearth of research into pronunciation pedagogy training within L2 teacher education programs, even though emerging research has clearly demonstrated that pronunciation teacher preparation can be adequate (Burri, 2015; Burri, Baker, et al., 2017; Burri, Chen, et al., 2017; Golombek & Jordan, 2005). How to provide such training to a wide variety of different types of L2 educators (e.g., English as a second language, English as a foreign language, English as an international language, etc.) is a key question to consider in today's globalized world. Given the challenges of the COVID-19 pandemic and uncertainties in providing quality education, it has become necessary for training to be provided flexibly in both online and face-to-face formats to address the needs of teachers and/or students who may need to teach and/or study from home, from afar, or in person as per their individual situations. Blended learning can address these needs.

Blended learning involves the innovative integration of both online and face-to-face educational experiences. Garrison and Kanuka (2004) explain that:

> Blended learning is both simple and complex. At its simplest, blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences. There is considerable intuitive appeal to the concept of integrating the strengths of synchronous (face-to-face) and asynchronous (text-based Internet) learning activities. At the same time, there is considerable complexity in its implementation, with the challenge of virtually limitless design possibilities and applicability to so many contexts. (p. 96)

Such learning is deemed potentially more powerful as the mixed learning environment can offer additional opportunities to engage students, or in the case of the present study's student teachers, in their learning endeavours (Delialioglu, 2012). Self-discipline and effective time management skills are essential in online and blended learning situations (Tang & Chaw, 2016); however, as students become more experienced in online environments, their potential for success increases substantially (Napier et al., 2011). Furthermore, positive interactions with the teacher are important in both online and blended learning environments (Hong, 2002; Hung & Chou, 2015), with access to the teacher signifying an important predictor of student satisfaction in blended learning (Martínez-Caro & Campuzano-Bolarín, 2011; te Pas et al., 2016). Students also appreciate how additional online learning opportunities can reinforce face-to-face classroom learning (Banditvilai, 2016). Research by Wang et al. (2018) has further shown that videos provided with the instructor's image are more likely to enhance students' learning of course content for declarative knowledge (knowledge of a particular topic), but not for procedural knowledge (knowledge of how to teach something). Their study found that adding the instructor's image to the latter significantly increases the learner's cognitive load (e.g., the amount of mental effort required).

In English language teaching (ELT), blended learning has been a hot topic for at least two decades (Sharma, 2010). While many of the advantages and issues discussed in the previous section also apply to ELT, research has revealed challenges and drawbacks that are particularly relevant to English language teachers working in blended learning contexts and, hence, to the focus of this study. Students' cultural background, for example, can impact their learning; that is, students from collective cultures, such as, for example, Japan or China, may find independent learning that is required before coming to class challenging (Gayatri et al., 2022). Some may be reluctant to engage in online discussions due to fear of making mistakes (Zhu et al, 2009), whereas others may feel isolated and thus lack motivation to engage in their studies (Fu, 2022). Constant accessibility of social media sites can also be a source of considerable distraction to some students in blended learning environments (Hamdan et al., 2017). Research has further shown that unreliable internet connections, technical problems, perceived increases in workload for both teachers and students, teachers' and students' limited computer literacy, perceived difficulties in following instructions, and teachers' lack of training, knowledge, and skills in the design and delivery of blended learning courses can all shape and even limit the effectiveness of teaching and learning in a blended environment (Fu, 2022; Gayatri et al, 2022; Majeed & Dar, 2022). Maintaining an appropriate balance between face-to-face and asynchronous online activities is essential in maximising the effectiveness of blended learning (Gayatri et al., 2022; Sheerah, 2020).

While these are important issues for L2 teacher educators to consider, explorations into blended learning offered to prepare teachers to teach pronunciation are essentially non-existent. Only one study has focused on online and blended learning in L2 oral communication teacher education. Baker (2022), in an investigation of a graduate-level course she taught on L2 oral communication and pedagogy, explored her reflective practices as a teacher educator as she redeveloped the course. Drawing on student survey data and peer observations of her practice, several suggestions for enhancing both course delivery and student engagement were determined, especially in further developing students' capacity for achieving higher levels of

critical thinking. While these findings are promising, research is needed to investigate teacher preparation more closely concerning pronunciation. Insights from such inquiry would enhance our understanding of learning dynamics in a blended L2 teacher education context. This is particularly relevant given that, with the pandemic, teacher training has increasingly moved to an online and asynchronous format, making adequate preparation of L2 teachers challenging. The present study, therefore, addresses a significant problem and makes an important contribution by providing novel insights into the process of student teachers' learning how to teach L2 English pronunciation (HTEP) via either online or blended on-campus modes of delivery. Specifically, it examines the case of a group of graduate-level (e.g., Master's) student teachers enrolled in either the on-campus or distance TESOL program at an Australian university.

This study examines the development of student teachers' knowledge and skills of HTEP as supported, partly or entirely, via a Moodle delivery system. As part of the investigation, this study looks at the student teachers' learning of HTEP to better help L2 learners achieve intelligible speech, in relation to studying solely online or via blended on-campus delivery. The research questions thus posed are:

1. To what extent does a course on L2 pronunciation pedagogy, whether conducted solely online or via blended on-campus delivery, enhance student teachers' learning of HTEP?
2. What are student teachers' perceptions of their learning of HTEP through taking the course?

METHOD

The objective of this study was to obtain an in-depth understanding of student teachers' learning, including their knowledge and understanding of HTEP through asynchronous online-only and blended on-campus coursework in a course on L2 English pronunciation pedagogy. To achieve this aim, online quizzes, final assignments, student teachers' Moodle postings, Moodle analytics, and narrative frames were collected and triangulated.

Participants

All students enrolled in the L2 English pronunciation pedagogy course at the graduate level Teaching English to Speakers of Other Languages (TESOL) program offered at the researchers' university in Australia were approached via email to request their participation in this study. They were provided with a Participant Information Sheet and an Informed Consent form. Volunteers to participate in the study were recruited at the end of the course, following the release of the students' final grades. The reason for this timing was considered to be in the best interest of the students. As explained in our research ethics application to the university's Human Research Ethics Committee, students may feel that participation or non-participation in the research study could adversely affect their grades; thus, to mitigate this potential concern, we asked students to participate only after they had already received their final grades for the course. Students who volunteered to participate returned their signed informed consent form via email.

In total, 13 students volunteered to participate in the study: five students in the distance (DIS) and eight in the on-campus (OC) program. Table 1 provides demographic information on students in each program, including their gender, first language (L1), years of experience

teaching English as a Second (ESL) or Foreign (EFL) language, years of experience teaching pronunciation specifically, and the type of program in which they taught prior to their graduate studies, including location. All names are pseudonyms. The second author taught the DIS students in an asynchronous online-only format (e.g., Moodle books, asynchronous online discussion forums, and, when needed, via email). The OC students were taught by the first author in a blended on-campus format which primarily involved weekly three-hour face-to-face lectures/workshops; however, the OC students also had access to the same asynchronous Moodle content/forum utilised by the DIS students and were welcome to interact and participate with the content/forum as well. As such, both cohorts accessed the same asynchronous Moodle resources over 11 weeks. The Moodle content was the primary mode of course delivery for DIS students, whereas for OC students it served as a supplement to their face-to-face classes (i.e., lecture/workshops) taught on campus.

Table 1. Participants

Program	Name	Gender	L1	Years of Teaching ESL/ EFL	Years of Teaching Pronunciation	Program Type	Program Location
OC	Diego	M	Spanish	0	0	N/A (Army officer)	Colombia
OC	Jose	M	Spanish	0	0	N/A (Army officer)	Colombia
OC	Lili	F	Mongolian	0	0	N/A (University student)	China
OC	Katie	F	English	0	0	N/A (Parent)	Australia
OC	Sophie	F	English	1	0	English for migrants	Australia
OC	Mai	F	Vietnamese	1	"Little"	Education Counsellor	Vietnam
OC	Risa	F	Japanese	3	1	English School Teacher	Japan
OC	Shota	M	Japanese	15	5	Junior High English Teacher	Japan
DIS	Jessica	F	English	5	3	ESL teacher	Australia
DIS	Zoe	F	English	10	10	ESL teacher	Australia
DIS	Jason	M	English	14	14	EFL teacher	Japan
DIS	Adele	F	Hebrew	20	Almost none	ESL teacher	Australia
DIS	Tanya	F	English	30 (mainstream)	30 (mainstream)	Primary school teacher	Australia

Instructional Design

The Moodle platform consisted of a series of weekly "Moodle books". A "Moodle book", as designated by the course management system known as Moodle, is a type of e-book that provides a set of learning materials organised in a series of online "pages". In this course, these Moodle books integrate both text-based and audio/video material, along with, depending on the focus of the module, video analyses of learner speech. The following weekly modules/Moodle books included:

1. Historical & Current Perspectives (on teaching pronunciation)
2. Consonants
3. Vowels – Part 1
4. Vowels – Part 2
5. Syllables & Word Stress
6. Thought Groups, Sentence Stress & Rhythm
7. Intonation
8. Connected Speech & Identifying Priorities
9. Taxonomy of Techniques
10. Fluency Development & Integrating Pronunciation
11. Pronunciation & Spelling

The general format of most Moodle books above included the following information:
- Introduction
- Main Content (series of pages with videos, audio mini-lectures, text-based discussion of content, and images such as face diagrams for consonantal sound productions)
- Knowledge about the target feature(s) of pronunciation (e.g., syllables and word stress)
- Knowledge about how to teach the target feature of pronunciation (e.g., using an elastic band to teach syllables and word stress)
- Speech Analysis (including video demos of the second author conducting a live analysis of L2 learner speech) (e.g., practice listening to L2 speech and identifying issues related to word or sentence stress)

For most modules (in the Moodle books and in the OC lectures/workshops), the HTEP content focused on a practical approach to teaching pronunciation that included an introduction to a wide variety of multi-sensory techniques (e.g., Acton, Baker, et al., 2013; Baker, 2014; Burri et al., 2019; Celce-Murcia et al., 2010; Gilbert, 2008) deemed appropriate for teaching specific features of English pronunciation. Students could post questions and reflective thoughts at any time on any content presented in the Moodle books on the main discussion forum on the Moodle site throughout the semester. In weeks 1-8 of the course semester, the students completed a series of four online Moodle quizzes to assess their knowledge of targeted pronunciation features. Every fortnight, students completed one of these open-book quizzes to evaluate their learning of two weeks of course content. Each quiz consisted of multiple-choice items and two open-ended questions. Throughout the semester, students also participated in an optional asynchronous online discussion forum where they could ask questions and provide helpful tips and other

discoveries/information to their peers. Finally, students had to complete a final 4,000-word assignment where they interviewed an L2 learner of English who had noticeable issues with their English pronunciation which had a negative impact on their intelligibility (as deemed by the interviewer-student but double-checked by one of the researchers via online submission to the Moodle platform before the students commenced their analysis of the learner's speech). Their interview involved (1) read speech – a diagnostic story provided by the authors, and (2) free speech – an unrehearsed story or recount of an event from the interviewee's past. The students then analysed this speech for segmental and suprasegmental features of pronunciation deemed difficult to understand based on the target features from weeks 2-8 of the course. They completed a diagnostic chart indicating problematic features of examples from the transcripts they analysed. Following the analysis, the student teachers had to make pedagogical recommendations for improving the learners' pronunciation to enhance their intelligibility.

Data Sources

In line with typical ways of determining student teachers' learning of course content and eliciting feedback on their learning process (Baker, 2022), the following data were collected: (1) results/responses to four online quizzes assessing their knowledge of English pronunciation plus their grades on these quizzes; (2) the students' final assignment; (3) Moodle discussion forum postings (the contributions of each participant were downloaded into a single Word file from the Moodle site); (4) Moodle participation analytics; and (5) narrative frames (Barkhuizen, 2014) comprising participants' accounts of their personal experiences in learning course content. Following previous research on learning to teach English pronunciation (Burri & Baker, 2020), narrative frames were used to elicit the student teachers' perceptions of the course content in developing their learning of HTEP. Narrative frames are "written story template[s] consisting of a series of incomplete sentences and blank spaces of varying lengths"; they are "[s]tructured as a story in skeletal form" with the "[a]im… to produce a coherent story by filling in the spaces according to writers' experiences and reflections on these" (Barkhuizen, 2015, p. 178).

Data Analysis

The data analysis was conducted using a multi-pronged approach, which included: Moodle analytics; analysis of assessment task marks and final course grades; and a thematic analysis of qualitative data (narrative frame questionnaire data, Moodle posts by students, and qualitative responses on online quizzes). First, Moodle analytics were employed to determine to what extent OC and DIS students accessed the Moodle book content. Details were provided for: a) Number of Moodle discussion forum posts made by each student; b) number of times students accessed pages in the Moodle books (total page views); and c) number of weekly Moodle books they accessed throughout the semester (total book views). These were subsequently compared with diverse factors (e.g., students' teaching experience/teaching context) to gain insights into the student teachers' learning of HTEP.

Second, the students' final grades for the course, the marks for the segmental and suprasegmental components of their final assignments, and the marks for the four quizzes were all examined. These were also compared with diverse factors (e.g., students' teaching

experience/teaching context) that might impact the student teachers' knowledge and understanding of HTEP.

Finally, qualitative data analysis included an inductive thematic analysis of the narrative frames, discussion forum postings (see Appendix), responses to open-ended quiz items, and the reflective section of the students' final assignments. This analysis was done to explore further the student teachers' understanding of pronunciation features and HTEP. Here, the data were examined to determine which aspects of the course content and/or delivery students required additional clarifications and advice, or, in the case of the Moodle forums, where they shared their personal experiences/understanding of content to support their peers in learning content.

FINDINGS AND DISCUSSION

Findings

This section will first examine the overall professional learning of the 13 DIS and OC students based on the analysis of assignment marks, final course grades, and Moodle analytics. Then it will explore the study participants' perceptions of their professional learning.

Student Teachers' Learning of HTEP

The analysis of the students' performance in the four quizzes in the first half of the semester indicates that the students achieved a strong overall level of knowledge of pronunciation and understanding of HTEP. Each quiz was scored out of 15 marks, with the average score of each cohort (OC and DIS) being provided in Table 2. The table shows that the eight OC students achieved marks only slightly higher than the five in the DIS group. Notably, both groups struggled the most with Quiz 4, which focused on intonation and connected speech for L2 learners.

Table 2. Knowledge of Pronunciation: OC vs DIS

Participant Group (# of participants)	Quiz 1: Historical/ Current Perspectives & Consonants	Quiz 2: Vowels	Quiz 3: Syllables, Stress, Thought Groups & Rhythm	Quiz 4: Intonation; Connected Speech & Identifying Priorities	Total Quiz Score
OC (8)	14.63 (97.53%)	13.06 (87.07%)	13 (86.67%)	12.5 (83.33%)	53.19 (88.65%)
DIS (5)	13.6 (91.07%)	13.2 (88%)	13.6 (91.07%)	10.8 (72%)	51.2 (85.33%)
Combined (13)	14.23 (94.87%)	13.12 (87.47%)	13.23 (88.2%)	11.85 (79%)	52.42 (87.37%)

(Note: Average Student Marks on Quizzes Scored out of 15 & Percentage of Overall Accuracy)

Student responses to the open-ended item on Quiz 4 revealed additional insights into what content the student teachers found most challenging to learn from Modules 7 and 8. Specifically, they indicated the following features to be the most challenging: Intonation (all 13 students);

Connected speech (2 DIS students) and Relative functional load (1 DIS student)[1]. Shota explained:

> One of the most challenging things to learn is intonation because I lack knowledge. In the class, I could not differentiate between varieties of tones, such as fall and rise. However, thanks to practicing it, I am getting used to it.

And Jason added that:

> Identifying pitch contour and intonation patterns is definitely the most difficult thing for me. I really like connected speech, but some of the terminology is difficult for me. But determining rising or falling intonation has always been difficult for me. I guess I am good at using it because I like to think I express my feelings well in English, but I am not good at labelling it. I need to go over my project 1000 times I think!

In the second part of the semester, students completed their 4000-word final assignment (see description above). Each of the segmental and suprasegmental analyses was marked holistically on a four-point scale: Not achieved = 0 marks; Achieved = 1 point; Achieved quite well = 2 points; Achieved to a high degree = 3 points. The theoretical discussion and pedagogical plan to discuss what instructional techniques they would employ to support the speaker in enhancing their production of the problematic features was scored out of 100 points.

As demonstrated in Table 3, student teachers in both the OC and DIS cohorts performed similarly in their analyses, with both cohorts achieving an average score of 2 out of 3 for their segmental analyses and 2.34 (OC) and 2.4 (DIS) for their suprasegmental analyses. Yet, the DIS students performed better on their overall final assignments, achieving an average of 82.4% overall, whereas the OC cohort achieved 73.25%. Looking across all the assessment tasks, it is important to note, however, that both groups received higher marks in their suprasegmental analyses, thus indicating that they had enhanced their understanding and knowledge of these features since taking Quiz 4 in the first half of the semester. Nonetheless, in the reflection section of the final assignment, two students commented on their ongoing difficulties with intonation. Adele explained that "It has been a challenging unit. I was particularly confused by the concept of pitch and intonation. I found it difficult to analyse [my interviewee's] speech items. They sounded different every time I listened to them!" Jose also noted that:

> This project involved a challenging topic: intonation. This theme was confusing because different patterns made it difficult to understand. However, the in-depth analysis of the intonation of the target individual speaking, the reading of extensive scholarly literature, and the explanations given by the course lecturers facilitated a clear understanding of this topic.

Table 3. Pedagogical Assignment: OC vs DIS

Participant Group (# of participants)	Segmental Analysis (Average Score)	Suprasegmental Analysis (Average Score)	Final Assignment Mark (Average Score)
OC (8)	2.0	2.38	73.25%
DIS (5)	2.0	2.4	82.4%

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[1] Note: some DIS students indicated more than one feature.

Participant Group (# of participants)	Segmental Analysis (Average Score)	Suprasegmental Analysis (Average Score)	Final Assignment Mark (Average Score)
Combined (13)	2.0	2.38	76.77%

(Note: Average Student Marks on Segmental and Suprasegmental analyses, each scored holistically out of 3; plus final assignment mark scored out of 100)

While the data derived from the four quizzes and final assignments showed that the student teachers' learning of HTEP progressed during the graduate pronunciation pedagogy course, the results also support previous research that intonation often poses difficulties for student teachers, irrespective of their teaching, linguistic, and cultural background (Burri, Baker, & Chen, 2017). Interestingly, however, the thematic analysis of the students' posts in the Moodle forum (see Appendix) rarely involved clarifications about intonation-related content or analysis (only one student); most requests for clarification focused instead on issues related to sentence-level stress (5 participants).

In addition to the quiz scores and final assignment marks, Moodle analytics and student teachers' final grades provided further insights into participants' learning. Results obtained from the Moodle analytics are presented alongside their final grade for the course in Table 4. As depicted in the table, OC students who accessed the Moodle books the least (notably Lili and Katie), in conjunction with their weekly OC (face-to-face) classes, achieved the lowest final grades in the graduate course. However, in the case of the DIS students, the lowest achieving student, Zoe, accessed all the Moodle books and viewed their pages more times than, for example, Jason and Jessica, but still received a lower result than those two DIS student teachers.

Table 4. Moodle Participation Analytics vs Final Mark

Program	Participant	Forum Posts	Total Page Views	Total Book Views	Final Grade
OC	Lili	0	52	4	49
OC	Katie	8	58	5	71
OC	Diego	0	229	6	81
OC	Jose	3	166	8	81
OC	Risa	0	284	10	81
OC	Sophie	16	128	7	85
OC	Shota	1	93	8	88
OC	Mai	0	477	11	88
DIS	Zoe	1	339	11	67
DIS	Adele	22	824	11	85
DIS	Jason	14	195	8	88
DIS	Tanya	1	568	11	88
DIS	Jessica	17	154	8	89

A closer examination of Zoe's final assignment revealed greater insight into why she received a lower grade than others despite what appeared to be a reasonably high level of

engagement with the Moodle content. In Zoe's feedback, the second author highlighted the lack of adherence to the model provided in the speech analysis videos, leading to missed pronunciation issues. Thus, despite what appeared to be enhanced engagement with the Moodle material, Zoe's engagement was superficial, failing to watch the video demonstrations of the analyses closely and following the model provided.

Overall, the Moodle analytics and the analysis of the students' task marks and final grades revealed that the online and blended on-campus course effectively supported both DIS and OC students in enhancing their knowledge and understanding of HTEP. Most students (at least those who chose to participate in the study) received final grades of 81% or higher. Those who received lower marks engaged with less than half the Moodle book content (Lili & Katie) or failed to engage deeply with the material (Zoe).

Student Teachers' Perception of Learning of HTEP

Thematic analyses of the narrative frames revealed that both the OC and DIS student teachers felt that the Moodle books played an important role in supporting their learning of HTEP. These findings align with the results of our analysis of the Moodle analytics, task marks, and final grades above. In this vein, the most prominent points the student teachers made (along with the number of participants who raised these points) were:

- useful/helpful (5)
- comprehensive/excellent source of knowledge (4)
- engaging/stimulating (2)
- well-organised/designed (2)
- good for reviewing (2)
- made content easy to understand (2)
- supported learning (1)
- effective (1)

Participants expanded on these points and provided several illustrative examples in their narrative frames. Zoe, for instance, wrote [prompts from the narrative frames in italics]:

> *I felt the weekly Moodle books* were very comprehensive, useful and well organised. As it is very challenging to study online without face-to-face interaction we need good online resources which the Moodle books provided. The variety of images, clips, videos etc was excellent. I also liked the little comics. *The advantage(s) of the Moodle books (with their written content, images/diagrams, brief audio lecture clips, various video and/or youtube clips and videos of speech analyses) was* visually pleasing and the audio clips of the assignment requirements was very helpful *because* the assignment was so massive, we needed all the examples, templates and support we could get.

Similarly, Jessica expressed that:

> *I felt the weekly Moodle books* were always stimulating to read, never boring and they made learning a joy. I looked forward to reading them each week and I particularly liked the addition of humour into the lessons (not a common thing in tertiary study) and the connection to the everyday – movies, comics, etc. Learning (at any time) needs to have a 'fun' element and I think this is underestimated by many lecturers.*The advantage(s) of the Moodle books (with their written content,*

images/diagrams, brief audio lecture clips, various video and/or youtube clips and videos of speech analyses) was that they provided a limited amount of content that could be absorbed without getting overwhelmed.

Furthermore, Sohpie explained that:

I felt the weekly Moodle books were an excellent source of knowledge and referral, especially the audio files, which were especially beneficial due to the fact, that I could listen to them many times at my convenience, was a huge help. *The advantage(s) of the Moodle books (with their written content, images/diagrams, brief audio lecture clips, various video and/or YouTube clips and videos of speech analyses) was* brilliant! As noted previously, I was able to access them as often as required to reaffirm new knowledge. Using Moodle for this subject proved to be absolutely essential and it's really the only subject thus far where I accessed Moodle regularly as an on-campus student.

Although the opinions expressed by student teachers were largely positive, they also raised a few concerns. For the most part, however, these concerns were individualised, with only one student commenting on any point. Perceived drawbacks of the Moodle books named by participants included:

- Too much information and new technical language (1 DIS)
- Desire for more self-testing instruments (1 DIS)
- Difficulty understanding some of the practical techniques without demonstration (1 DIS)
- Automatic logouts (1 OC)
- Difficult to print out due to formatting (1 OC)
- Issues with downloading the whole Moodle book (doesn't include video/audio content) (1 OC)

Regarding the first point about the Moodle books containing too much information, Zoe explained that:

The disadvantage(s) of the Moodle books was too much information for me. I printed all the Moodle books to study and it was very stressful to try and read and comprehend and keep up with everything. There was a lot of new terminology and technical language, I found it very hard doing it online in this sense.

Despite these perceived disadvantages, most student teachers appeared to be satisfied with the content provided, irrespective of whether they were in the OC or DIS group. When asked what they felt were the disadvantages of the Moodle books, six of the 13 student teachers stated, "None." Tanya mentioned, "I found no disadvantage of the Moodle books as they were well planned out and supported by my lecturer."

Discussion

Overall, the results of this study demonstrated that the participants' knowledge and understanding of HTEP developed notably during the pronunciation pedagogy course, irrespective of whether the student teachers were enrolled in the blended on-campus (OC) or online-only (DIS) version. The combined results taken from comparative analyses of the student teachers' quiz scores throughout the semester, performance in the suprasegmental and segmental

analyses, final assignment marks, Moodle analytics, complete with final grades coupled with the thematic analyses of the narrative frames eliciting the viewpoints of the students clearly showed the success of the course in developing the student teachers' HTEP. Specifically designed to develop student teachers' knowledge of English pronunciation and how to teach it to L2 learners, the Moodle books played a significant role in their learning. Whether OC students used the Moodle books to supplement or revise the content of their weekly three-hour face-to-face classes, or DIS students who learned solely from these materials, the Moodle books supported students' learning of course content. As noted earlier, aside from a single study focusing on online and blended learning in more general L2 oral communication (Baker, 2022), this is the first study to examine L2 pronunciation teacher learning in this particular setting. Such an exploration is needed given the important role of pronunciation in achieving successful oral communication (Baker, 2021; Celce-Murcia et al., 2010; Darcy, 2018) and the prevalence of online teaching since the onset of the COVID-19 pandemic. As the present study showed, the development of comprehensive Moodle books supports the learning of HTEP for both DIS and OC students.

Student teachers' academic achievements further evidenced their learning of HTEP. As revealed by the final assignment scores and final course marks, both DIS and OC student teachers' learning, regardless of years of teaching experience or language background, enhanced their knowledge and understanding of HTEP during the blended course. Individual assignment and quiz marks, plus final course grades for both groups, were similar, although the OC cohort had a slightly lower average overall. Nonetheless, the analysis of the narrative frames revealed that both OC and DIS student teachers felt sufficiently supported to succeed in their studies, and neither group felt disadvantaged. Furthermore, their final grades suggested that most student teachers understood HTEP well; however, quiz marks showed slightly lower results for Quiz 4 (Intonation and Connected Speech), especially for the DIS student teachers. This aligns with the participants' reported perceptions about the difficulty of learning intonation. For L2 teacher educators, the participants' challenges with intonation might be concerning given not only the substantial communicative value that intonation and other suprasegmentals features have in speech (Brazil, 1997; Kang et al., 2010), but that previous research has also reported similar difficulties teachers have with teaching intonation (Baker, 2011; Couper, 2017). However, this concern might not be warranted, as by the end of the semester, both OC and DIS groups achieved higher average scores in the suprasegmental analysis than in the segmental analysis in the final assignment. This demonstrated improved performance since their quiz four scores, and thus an enhanced understanding of English intonation and how to apply that newly gained understanding to identify problematic intonation use in L2 learner speech.

All of the combined data, consisting of both student teacher-generated products (assignments) plus their perceptions of how well they understood course content (online Moodle forums and narrative frames), helped us determine the effectiveness of the blended on-campus and online course for both the OC and DIS students in learning HTEP. Two comments by students in their final assignment reflections represent their thoughts about the value of their learning in a blended on-campus and online graduate course. Tanya from the DIS cohort wrote: "This [course] (and this project in particular) has been immensely challenging but also one of

the most enlightening [courses] in the entire [program]". Similarly, Sophie from the OC cohort expressed:

> I have been fascinated and surprised by how much there is to know about this discipline and can't help but wonder why this is not a compulsory [course]. […] The fact that I can speak with a 'developing' confidence and experiment with techniques and explanations, has been a highly beneficial and extremely worthwhile subject area to undertake.

CONCLUSION

This study has demonstrated the effectiveness of a dual model of online only and on-campus blended learning to enhance student teachers' knowledge and understanding of how to teach pronunciation, especially at the postgraduate level. As research has shown, teachers may be reluctant to teach pronunciation due to insufficient pedagogical training or confidence (e.g., Baker, 2014; Couper, 2017) and therefore online Moodle books, used as a supplement to on-campus learning or to serve as the backbone of online-only learning, may help to address the issue. Moodle books may be invaluable to students, especially when they incorporate, for example, video footage of the application of pronunciation teaching techniques and the course instructor conducting segmental and suprasegmental analyses of L2 learner speech and explaining these analyses. Students can subsequently watch and re-watch as needed. The more practice student teachers have with analysing L2 learner speech, the more confident and less reluctant they will be to address pronunciation in the L2 classroom. Another advantage of the Moodle books is they help L2 teacher education programs to address the need to deliver courses in multiple formats, including on-campus only, blended on-campus, asynchronous online only (with a discussion forum such as that used in the current study) and even synchronous online only (incorporating live tutorials via Zoom of similar technology as we now use in subsequent offerings of this course). Multiple delivery modes provide greater access to an increasingly more diverse student teacher population who may need enhanced support with their studies or cannot always commit to study using more traditional face-to-face methods.

We acknowledge that the relatively small number and diversity of participants limit the potential generalisability of the study's findings. Most of our OC group had little to no pronunciation-specific teaching experience, whereas the DIS group had considerable expertise. However, this is the reality of graduate-level education in our Australian context. We need to provide an educational experience in HTEP to a wide range of students from diverse language backgrounds and teaching experiences. The Moodle books help us to meet the needs of such a diverse cohort. Furthermore, having this flexibility is critically important in a world that, at any time, may require a sudden shift to online-only learning (e.g., when faced with a pandemic).

REFERENCES

Acton, W., Baker, A., Burri, M., & Teaman, B. (2013). Preliminaries to haptic-integrated pronunciation instruction. In J. M. Levis & K. LeVelle (Eds.), *Proceedings of the 4th Pronunciation in Second Language Learning and Teaching Conference, Aug. 2012* (pp. 234-244). Iowa State University. https://ro.uow.edu.au/sspapers/415/

Baker, A. (2011). Discourse prosody and teachers' stated beliefs and practices. *TESOL Journal*, *2*(3), 263-292. https://doi.org/10.5054/tj.2011.259955

Baker, A. (2014). Exploring teachers' knowledge of L2 pronunciation techniques: Teacher cognitions, observed classroom practices and student perceptions. *TESOL Quarterly*, *48*(1), 136-163. https://doi.org/10.1002/tesq.99

Baker, A. (2021). Development of a coaching model to clear and fluent pronunciation in Australia. *English Australia Journal*, *37*(1), 27-39. https://www.englishaustralia.com.au/documents/item/1201

Baker, A. (2022). Enhancing teachers' knowledge base of L2 oral communication pedagogy: Reflective practices of an online teacher educator. *English Australia Journal*, *38*(2), 5-22. https://search.informit.org/doi/10.3316/informit.688706216081906

Baker, A., & Murphy, J. (2011). Knowledge base of pronunciation teaching: Staking out the territory. *TESL Canada Journal*, *28*(2), 29-50. https://doi.org/10.18806/tesl.v28i2.1071

Banditvilai, C. (2016). Enhancing students' language skills through blended learning. *Electronic Journal of e-Learning*, *14*(3), 220-229. https://eric.ed.gov/?id=EJ1107134

Barkhuizen, G. (2014). Revisiting narrative frames: An instrument for investigating language teaching and learning. *System*, *47*, 12-27. https://doi.org/http://dx.doi.org/10.1016/j.system.2014.09.014

Barkhuizen, G. (2015). Narrative inquiry. In B. Paltridge & A. Phakiti (Eds.), *Research methods in applied linguistics* (pp. 169-185). Bloomsbury.

Brazil, D. (1997). *The communicative value of intonation in English*. Cambridge University Press.

Burri, M. (2015). "My perspective changed dramatically": A case for preparing L2 instructors to teach pronunciation. *English Australia Journal*, *31*(1), 19-37. https://search.informit.org/doi/10.3316/informit.718007044413549

Burri, M. (2023). Comparing L2 teachers' practices with learners' perceptions of English pronunciation teaching. *PROFILE: Issues in Teachers' Professional Development*, *25*(1), 129–145. https://doi.org/https://doi.org/10.15446/profile.v25n1.101156

Burri, M., Acton, W., & Baker, A. (2019). Moving to L2 fluency: The tai ball chi technique. *Speak Out! Journal of the IATEFL Pronunciation Special Interest Group*, *60*, 43-51. https://pronsig.iatefl.org/journal/

Burri, M., & Baker, A. (2020). "A big influence on my teaching career and my life": A longitudinal study of learning to teach English pronunciation. *TESL-EJ*, *23*(4). http://www.tesl-ej.org/wordpress/issues/volume23/ej92/ej92a11/

Burri, M., Baker, A., & Chen, H. (2017). "I feel like having a nervous breakdown": Pre-service and in-service teachers' developing beliefs and knowledge about pronunciation instruction. *Journal of Second Language Pronunciation*, *3*(1), 109-135. https://doi.org/10.1075/jslp.3.1.05bur

Burri, M., Baker, A., & Chen, H. (2018). Establishing a framework for learning to teach English pronunciation in an Australian TESOL program. *Australian Review of Applied Linguistics*, *41*(3), 307-327. https://doi.org/https://doi.org/10.1075/aral.18020.bur

Burri, M., Chen, H., & Baker, A. (2017). Joint emergence of teacher cognition and identity through learning to teach L2 pronunciation. *The Modern Language Journal*, *101*(1), 128-142. https://doi.org/10.1111/modl.12388

Celce-Murcia, M., Brinton, D. M., Goodwin, J. M., & Griner, B. (2010). *Teaching pronunciation: A reference for teachers of English to speakers of other languages* (2nd ed.). Cambridge University Press.

Couper, G. (2017). Teacher cognition of pronunciation teaching: Teachers' concerns and issues. *TESOL Quarterly*, *51*(4), 820-843. https://doi.org/10.1002/tesq.354

Dao, D. (2018). Learners' perspectives on English pronunciation teaching and learning: A preliminary study in the Vietnamese context. In J. Levis (Ed.), *Proceedings of the 9th Pronunciation in Second Language Learning and Teaching Conference* (pp. 86–99). Iowa State University. https://www.iastatedigitalpress.com/psllt/article/15344/galley/13581/view/

Darcy, I. (2018). Powerful and effective pronunciation instruction: How can we achieve it? *The CATESOL journal*, *30*(1), 13-45. http://www.catesoljournal.org/wp-content/uploads/2018/03/CJ30.1_darcy.pdf

Delialioglu, O. (2012). Student engagement in blended learning environments with lecture-based and problem-based instructional approaches. *Educational Technology & Society*, *15*(3), 310-322. https://www.jstor.org/stable/jeductechsoci.15.3.310

Foote, J. A., Holtby, A. K., & Derwing, T. M. (2011). Survey of the teaching of pronunciation in adult ESL programs in Canada, 2010. *TESL Canada Journal*, *29*(1), 1-22. https://doi.org/https://doi.org/10.18806/tesl.v29i1.1086

Fu, S. (2022). Designing for a production-oriented approach to blended learning in English language teaching. *International Journal of Technology-Enhanced Education, 1*(1), 1-16. http://doi.org/10.4018/IJTEE.316457

Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, *7*(2), 95-105. https://doi.org/https://doi.org/10.1016/j.iheduc.2004.02.001

Gayatri, P., Chen, S., & Sit, H. (2022). A review on blended learning for English language teaching in Indonesian higher education. In A. W. B. Tso, A. C. Chan, W. W. L. Chan, P. E. Sidorko, & W. W. K. Ma (Eds.), *Digital communication and learning. Educational communications and technology yearbook* (pp. 253-277). Springer.

Gilbert, J. B. (2008). *Teaching pronunciation: Using the prosody pyramid*. Cambridge University Press. http://www.tesol.org/docs/default-source/new-resource-library/teaching-pronunciation-using-the-prosody-pyramid.pdf?sfvrsn=0

Golombek, P. R., & Jordan, S. R. (2005). Becoming "black lambs" not "parrots": A poststructuralist orientation to intelligibility and identity. *TESOL Quarterly*, *39*(3), 513-534. https://doi.org/https://doi.org/10.2307/3588492

Hamdan, N. A., Mohamad, M., & Shaharuddin, S. (2017). Hypermedia reading materials: Undergraduate perceptions and features affecting their reading comprehension. *The Electronic Journal of e-Learning, 15*(2), 116-125. https://academic-publishing.org/index.php/ejel/article/view/1825/

Hong, K.-S. (2002). Relationships between students' and instructional variables with satisfaction and learning from a Web-based course. *The Internet and Higher Education*, *5*(3), 267-281. https://doi.org/https://doi.org/10.1016/S1096-7516(02)00105-7

Hung, M.-L., & Chou, C. (2015). Students' perceptions of instructors' roles in blended and online learning environments: A comparative study. *Computers & Education*, *81*, 315-325. https://doi.org/10.1016/j.compedu.2014.10.022

Jee, M. J. (2022). Communicative anxiety among Korean immigrants in Australia: Causes and coping strategies. *Australian Review of Applied Linguistics, 46*(3), 293-315. https://doi.org/https://doi.org/10.1075/aral.21016.jee

Kang, O., Rubin, D. O. N., & Pickering, L. (2010). Suprasegmental Measures of Accentedness and Judgments of Language Learner Proficiency in Oral English. *The Modern Language Journal*, *94*(4), 554-566. https://doi.org/10.1111/j.1540-4781.2010.01091.x

Ledford, V., Wang, X., Anderson, L. B., Leach, J., Lucas, M., & Mazzone, R. (2023). Communication apprehension in the online presentational speaking course: Considerations for synchronous course meetings and asynchronous presentations. *Communication Teacher, 37*(1) 64-82. https://doi.org/10.1080/17404622.2022.2046284

Macdonald, S. (2002). Pronunciation - Views and practices of reluctant teachers. *Prospect*, *17*(3), 3-18. https://search.informit.org/doi/10.3316/aeipt.124108

Majeed, M., & Dar, F. R. (2022). Investigating the efficacy of blended learning in ESL classrooms. *Cogent Education, 9*(1), 2133500. http://doi.org/10.1080/2331186X.2022.2133500

Martínez-Caro, E., & Campuzano-Bolarín, F. (2011). Factors affecting students' satisfaction in engineering disciplines: Traditional vs. blended approaches. *European Journal of Engineering Education*, *36*(5), 473-483. https://doi.org/10.1080/03043797.2011.619647

McDonough, K., Trofimovich, P., Tekin, O., & Sato, M. (2022). Exploring linguistic stereotyping of international students at a Canadian university. *Journal of Multilingual and Multicultural Development, 45*(9), 1-16. https://doi.org/10.1080/01434632.2022.2115049

Murphy, J. (2014). Myth 7: Teacher training programs provide adequate preparation in how to teach pronunciation. In L. Grant (Ed.), *Pronunciation myths: Applying second language research to classroom teaching* (pp. 188-224). The University of Michigan Press. https://doi.org/10.3998/mpub.4584330

Murphy, J. (2017). Teacher training in the teaching of pronunciation. In O. Kang, R. I. Thomson, & J. Murphy (Eds.), *The Routledge Handbook of Second Language Pronunciation* (pp. 298-319). Routledge.

Napier, N. P., Dekhane, S., & Smith, S. (2011). Transitioning to blended Learning: Understanding student and faculty perceptions. *Journal of Asynchronous Learning*, *15*(1), 20-32. https://doi.org/https://doi.org/10.24059/olj.v15i1.188

Reed, M., & Levis, J.M. (2015). *The handbook of English pronunciation*. John Wiley & Sons, Inc. https://doi.org/10.1002/9781118346952

Sharma, P. (2010). Blended learning. *ELT Journal, 64*(4), 456-458. https://doi.org/10.1093/elt/ccq043

Sheerah, H. A. H. (2020). Using blended learning to support the teaching of English as a foreign language. *Arab World English Journal, 6,* 191-211. https://dx.doi.org/10.24093/awej/call6.13

Tang, C. M., & Chaw, L. Y. (2016). Digital literacy: A prerequisite for effective learning in a blended learning environment? *Electronic Journal of E-Learning*, *14*(1), 54. https://academic-publishing.org/index.php/ejel/article/view/1743

te Pas, E., Meinema, J. G., Visser, M. R. M., & van Dijk, N. (2016). Blended learning in CME: The perception of GP trainers. *Education for Primary Care*, *27*(3), 217-224. https://doi.org/10.1080/14739879.2016.1163025

Teló, C., Trofimovich, P., & Grantham O'Brien, M. (2022). Disentangling professional competence and foreign accent. *Journal of Second Language Pronunciation, 8*(3), 413-443. https://doi.org/https://doi.org/10.1075/jslp.22013.tel

Thomson, R. I. (2014). Myth 6: Accent reduction and pronunciation instruction are the same thing. In L. Grant (Ed.), *Pronunciation myths: Applying second language research to classroom teaching* (pp. 160-187). The University of Michigan Press. https://doi.org/https://doi.org/10.3998/mpub.4584330

Wang, H., Pi, Z., Hu, W. (2018). The instructor's gaze guidance in video lectures improves learning. *Journal of Computer Assisted Learning, 35*(1), 42-50. https://doi.org/10.1111/jcal.12309

Zhu, C., Valcke, M., & Schellens, T. (2009). A cross-cultural study of online collaborative learning. *Multicultural Education & Technology Journal, 3*(1), 33-46. https://doi.org/10.1108/17504970910951138

APPENDIX

Program	Participant	# of Forum Posts	Themes (# of posts per theme)
OC	Lili	0	
OC	Katie	8	o Thanking peers/instructors for information/advice (4) o Not understanding where to find content on the Moodle site (2) o Sharing learning experience within course – challenges encountered (1) o Seeking clarification about conducting language analyses (1)
OC	Diego	0	
OC	Jose	3	o Seeking clarification about conducting language analyses (2) o Thanking peers/instructors for information/advice (1)
OC	Risa	0	
OC	Sophie	16	o Sharing learning experience within course (including new knowledge learned and challenges encountered) (6) o Sharing info/advice with classmates (especially after struggling to first learn difficult content) (4) o Thanking peers/instructors for information/advice (3) o Seeking clarification about course content (1) o Seeking clarification about conducting language analyses (1) o Seeking logistical clarification/advice about assessment tasks (1)
OC	Shota	1	o Sharing information/advice (1)
OC	Mai	0	
DIS	Zoe	1	o Self-Introduction (1)
DIS	Adele	22	o Seeking logistical clarification/advice about assessment tasks (10) o Thanking peers/instructors for information (7) o Sharing learning experience within course (including new knowledge learned and challenges encountered) (2) o Self-introduction (1) o Request for advice/information (1) o Other question – unrelated to course content (1)
DIS	Jason	14	o Thanking peers/instructors for information/advice (7) o Seeking logistical clarification/advice about assessment tasks (4) o Seeking clarification about conducting language analyses (2) o Eager to get early access to all weekly content early (1)
DIS	Tanya	1	o Self-Introduction (1)

Program	Participant	# of Forum Posts	Themes (# of posts per theme)
DIS	Jessica	17	o Sharing learning experience within course (including new knowledge learned and challenges encountered) (5) o Thanking peers/instructors for information/advice (4) o Sharing info/advice with classmates (including after struggling to learn difficult content) (2) o Seeking logistical clarification/advice about assessment tasks (2) o Seeking clarification about conducting language analyses (2) o Seeking clarification/identifying problems with course content (1) o Apologizing for missing information (1)