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The influence of an online pronunciation teacher’s manual on teachers’ cognitions

Sinem Sonsaat
Iowa State University

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The influence of an online pronunciation teacher’s manual on teachers’ cognitions

by

Sinem Sonsaat

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Applied Linguistics and Technology

Program of Study Committee:
John Levis, Major Professor
Volker Hegelheimer
Tammy Slater
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Cristina Pardo-Ballester

The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University

Ames, Iowa

2017

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DEDICATION

For my father, Sururi Sonsaat, and my mother, Taliha Sonsaat, who have always supported me to fulfill my dreams.
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<td>ESL</td>
<td>English as a second language</td>
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<td>NEST</td>
<td>Native English-speaking teacher</td>
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<td>NNEST</td>
<td>Non-native English-speaking teacher</td>
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ABSTRACT

Despite their importance, teacher’s manuals (TM) have never drawn much attention in language teaching research, and therefore they have not been researched from the perspective of pronunciation teaching. It may be that they have not been perceived as having a role more than being an answer key for student materials (Sheldon, 1987). However, TMs deserve attention since curriculum materials - including TMs - have a positive impact on teachers’ learning and professional development (Grossman & Thompson, 2008). TMs may especially be crucial in supporting teachers in pronunciation teaching since many teachers find this skill challenging because of lack of training (Foote, Holtby, & Derwing, 2011), lack of experience (Burns, 2006), lack of knowledge (Baker & Murphy, 2011), and lack of confidence (Bernat, 2008).

This study investigated native and non-native English-speaking teachers’ (NEST and NNEST) cognitions – mainly knowledge – in relation to (1) pronunciation teaching and (2) pronunciation teaching materials. In addition, the study explored (3) how teachers used an online teacher’s manual (OTM) and (4) what kind of influences the OTM had on pronunciation teachers’ cognitions about and confidence in pronunciation teaching. Data of this study for the first two research questions came from the survey responses of 54 teachers (NEST=34; NNEST=20) and interview responses of 24 teachers (NEST=14; NNEST=10). Data for the third and fourth research questions came from the weekly journal responses and the tracking of real-time data use of eight teachers (NEST=5; NNEST=3) who taught with the OTM.

Findings showed that native and non-native English-speaking teachers said that lack of subject-matter knowledge or pedagogical content knowledge made pronunciation teaching challenging at times. Lack of knowledge was shown to be influential on their confidence in teaching certain pronunciation features. Examination of teachers’ cognitions related to
pronunciation teaching materials showed that most of the teachers used a textbook while teaching pronunciation and less experienced teachers relied on their textbooks more heavily. In line with this finding, less experienced teachers, regardless of their language background, used the OTM more strictly, and mostly for the guidance it provided rather than for the answers. The OTM was influential in increasing and refreshing teachers’ knowledge of pronunciation, regardless of language and education background, and in boosting some teachers’ confidence in teaching pronunciation. Additionally, the use of the OTM was influential on creating positive attitudes towards using technology in teaching for some teachers who previously preferred using printed materials.

This study shows that all kinds of teachers, NESTs and NNESTs, inexperienced and experienced, trained and untrained may benefit from information presented in a multimodal format in an OTM. The OTM brings flexibility into teachers’ materials preferences with its practicality and accessibility. This study shows that a TM designed in an online platform is promising for making contributions to teachers’ cognitions including their knowledge, and attitudes, and therefore positively affecting their confidence as pronunciation teachers. In this, a TM can be more than just an answer key, and can also become an important contributor to the continuing development of teacher cognitions. For pronunciation teaching, where many teachers have had inadequate training, a well-designed TM can provide the support that can make their teaching more knowledgeable and effective.
CHAPTER 1: INTRODUCTION

Teaching is a multidimensional process with many stakeholders such as teachers, learners, administrators and materials developers. Teachers are one of the most crucial actors in this process and the ones connecting all other stakeholders. They are the first users of many language teaching materials such as textbooks and the supplementary materials such as dictionaries, practice books, digital components (i.e., audio and video) and teacher’s manuals (TM). Among all these materials, TMs have received the least attention although they are designed to support teachers.

Teachers frequently report that they do not have a TM for their textbook or they do not know if there is a TM for it or not (Sonsaat, 2016). The author of a well-known oral communication skills book for international teaching assistants, a participant in this study, said “I was talking to some of the people that actually use some of the books and they said oh I didn’t realize there’s a teachers’ manual. So that was an eye-opener because I had assumed that people were aware of that but I guess not.” (Connie, personal communication, May 2016). Many teachers note that they do not tend to use a TM because its perceived role is limited to being an answer key. Although teachers are likely to use a free TM, they usually do not want to spend money on it even if it costs only a small amount of money.

TMs are not one of the publishers’ priorities since they are not profitable. Publishers usually do not want to invest money in a TM as it is either free supplementary material to a textbook or it is sold very cheaply. Judy Gilbert, the author of a worldwide popular pronunciation teaching book, *Clear Speech*, previously said publication houses sometimes spend a lot of money for good quality paper for the student book and therefore they do not have much money left to invest in the TM (personal communication, May 2016). What this means is that
usually only one free TM is given to a school when they order many copies of the student book; however, teachers do not have their individual copies of the TM which decreases the accessibility and the use of a TM.

Clearly, TMs do not garner much attention, either from publishers or from teachers. However, their potential contribution to teaching should not be underestimated since they can provide guidance teachers may need for various reasons. We do not get to see what happens behind the scenes, but it is not hard to imagine that each teacher comes to the classroom with their own history in their subject-field. That is, a lot of factors affect how they teach, such as their learning experiences, teaching experiences, interaction with teaching materials, personal characteristics, educational background and in the case of language teaching, their language backgrounds.

Because of the individual differences given above, teachers’ cognitions (their knowledge, beliefs, and thoughts) in teaching various language skills may differ. A teacher may be very knowledgeable and confident in teaching a certain language skill and may have positive attitudes towards and beliefs about teaching it. Yet, the same teacher may not have much knowledge about another language skill, and attitudes towards the importance of teaching that skill may be quite negative. Teachers’ willingness to teach various language skills may in return be affected by their cognitions about it.

Many teachers report having difficulties, for instance, in teaching pronunciation because they do not have training in it (Foote, Holtby, & Derwing, 2011); that is, they do not have pedagogical knowledge to teach it (Baker & Murphy, 2011); they are not a native speaker of the target language they teach (Bernat, 2008); they are not experienced in teaching it (Burns, 2006); and they do not have appropriate materials to teach it (Baker & Murphy, 2011). All these reasons
add to teachers’ reluctance to teach pronunciation. However, teachers can be supported by the immediate help of a carefully-designed TM.

With the advance of technology, TMs that are better suited to the nature of pronunciation teaching and that are more accessible and lower in cost can be produced. Digital and web-based materials have changed the way language teaching materials are presented. Storing the content of a TM in a web-based platform may help with space and design issues. For instance, more guidance can be provided without considering the number of pages to be printed, or information can be presented in auditory, video and visual modes. Considering the physical and acoustic nature of pronunciation teaching, for instance, embedding videos into a TM may be informative for a pronunciation teacher; it is possible on a web-based platform to have a pronunciation expert providing content and pedagogical content knowledge in a short video. These could be done for printed material as well, but the digital components presented in a supplementary CD or DVD which may again increase the cost and accordingly accessibility of the support provided to teachers in a traditional TM.

Teacher’s manuals have much potential to help teachers with differing cognitions in their subject-field area. As shown in other studies, curriculum materials, including TMs, are influential on teachers’ ongoing development and learning (Collopy, 2003; Grossman & Thompson, 2008). As stated by Loewenberg Ball and Cohen (1996), “materials could be designed to place teachers in the center of curriculum construction and make teachers' learning central to efforts to improve education, without requiring heroic assumptions about each teacher's capacities as an original designer of curriculum” (p.7). It should be kept in mind that teachers teaching English pronunciation differ in experience, training, native language, and so on. Thus, these teachers may have different cognitions stemming from their differences, and a
TM should be designed to help a wide range of teachers without assuming too much about what they know. Considering how frequently teachers use online materials like Google as their primary source of learning when they look for something particular (Sonsaat, 2016), a TM presented in an online platform seems to be promising in addressing the needs of teachers with different cognitions.

1.1 Motivation for the Study

The motivation for this study came from my own teaching experiences in 2013. A native English-speaking teacher and I taught pronunciation concurrently to two intact groups of adult learners at Iowa State University for a research study exploring the effect of teachers’ first language on students’ comprehensibility and accentedness improvements (Levis, Sonsaat, Link, & Barriuso, 2016). During this study, we both used the same student materials (Levis & Muller, n.d.) accompanied by a teacher’s manual (TM).

During the eight weeks we taught, we had regular meetings with the other researchers in the study to discuss how things were going. Although the native English-speaking teacher (NEST) in this study and I were similar to each other in many aspects, such as the training and experience we had in pronunciation teaching, we noticed that the way that we prepared for teaching and the way we used the TM differed a lot. I almost always checked the answers of each exercise from the TM and used online dictionaries frequently to look at the phonetic transcriptions or word stress patterns of words especially while teaching segmental features and word stress. Additionally, I Googled a lot for various reasons such as looking for more cultural information about some things used in the student’s materials (i.e., Aesop’s fables). Sometimes I did not know things and sometimes I wanted to have more thorough information about them before going to class, to feel better prepared and more confident.
My approach to the TM was different from my NEST colleague’s, since I relied on the TM’s authority more. There was one particular time that the answer key for one of the exercises in the manual was wrong, but I thought I was wrong and I could not hear anything in the way I was supposed to do in that exercise based on the answer key. This was confidence shaking for me, but during one of our regular discussions, I learned that the answer key was wrong. My colleague stated that she did not check the answer keys as often as I did, especially whenever she could tell the answers based on her native speaker intuitions. The times that she needed to check the TM were the times she needed help about how to explain certain pronunciation features or how to explain other things when pronunciation teaching required some knowledge of other skills such as grammar.

The first author of our research study was one of the authors of the book we taught with, so we had the chance to talk about the issues in the student’s material and the TM in our regular meetings. Oftentimes, my NEST colleague and I asked for more explanation on different things, and the author of the book stated that he and the other author might have assumed too much about what teachers’ knowledge and needs would be.

What my experience in this study showed me was that the needs and wants of teachers may be different because of individual differences such as their language backgrounds, as in our case. The fact that I spent so much time searching for the pronunciation or word stress patterns of words and my colleague’s looking for explanation for other things, sometimes not directly pronunciation-related, in online sources made me think about designing a TM that would be comprehensive enough to meet the needs of different teachers. Considering the spoken nature of pronunciation, which also requires much listening, a TM combining different modalities – such as audio and video – seemed to be a good solution. With other skills, for instance reading and
writing, written explanations may suffice to meet the needs of teachers and there may not be a need for audio or video components for better understanding of language features. However, pronunciation teachers can clearly benefit from seeing what is happening physically. Thus, I decided to create an online TM and investigate how it affected English teachers’ cognitions regarding pronunciation teaching.

1.2 Statement of the Problem

Pronunciation teaching is challenging for many native and non-native English-speaking teachers, and teachers both in ESL and EFL contexts have been reported to be reluctant to teach it (Burns, 2006; Macdonald, 2002). Factors contributing to the difficulty of pronunciation teaching include lack of training (Foote, Holtby, & Derwing, 2011), lack of appropriate materials and pedagogical knowledge (Baker & Murphy, 2011), lack of confidence (Bernat, 2008; Rajagopalan, 2005), and lack of experience (Burns, 2006). In addition to these factors, some non-native English-speaking teachers may not feel secure enough to teach pronunciation because they are not native speakers, and therefore do not acknowledge themselves as an appropriate input source for English pronunciation teaching (Levis, Link, & Sonsaat, 2017).

A study conducted in Canada by Breitkreutz, Derwing, and Rossiter (2001) investigated training opportunities and materials for pronunciation teaching. The authors reported that only 30% of their participants (N=67) had training in pronunciation teaching. This study was replicated with 201 participants in the same setting by Foote, Holtby, and Derwing (2011). The authors noted that the number of instructors who had pronunciation training was higher compared to ten years before (52%). Foote et al. added that 75% of their participants expressed their desire for more pronunciation training, and they indicated that only 58% of teachers were fully comfortable teaching segmentals (vowels and consonants), and almost the same number,
56%, were comfortable teaching suprasegmentals (stress, rhythm and intonation). Henderson et al. (2012) collected data from 459 English teachers in Europe, most of whom were non-native English speakers. The authors reported that although most teachers rated their pronunciation highly, they still expressed the need for more training in how to teach pronunciation. Finally, there have been other studies in which teachers expressed having lack of confidence in pronunciation teaching and needing for more training or more materials for professional development in it (Burns, 2006; Macdonald, 2002).

Most native and non-native English-speaking teachers in Sonsaat (2016) had training in pronunciation teaching and rated their knowledge and confidence high in pronunciation teaching, but most teachers from both groups raised concerns about teaching certain pronunciation skills, especially intonation, since they did not feel fully comfortable in teaching those skills. What this shows is that a lack of comfort is not only about having a lack of training or confidence. Even experienced teachers needed additional support and having accessible support made them feel more comfortable in teaching.

As shown in previous research, teachers may look for assistance either in resource and teaching books, or in professional conferences and workshops, which may not provide them with sufficient support in areas they feel less competent in a limited amount of time. As for resource books, they are not used as frequently as textbooks, according to Sonsaat (2016), and almost no teachers referred to resource books but to various online sources when they needed additional help on how to explain a pronunciation feature. YouTube videos were frequently mentioned by the teachers since they said they could see how other people taught the feature they wanted to teach. Many other teachers referred to the website developed by University of Iowa (http://soundsofspeech.uiowa.edu/english/english.html) for explaining English sounds to their
students. A few teachers mentioned websites like Youglish.com to listen to the pronunciation of words from various English speakers. What this study clearly showed was that teachers most often consulted web-based materials (not printed materials) whenever they needed for some help in explaining something or providing authentic speech samples. Considering the spoken and listening-based nature of pronunciation, print materials alone seem to fall short of meeting the immediate needs and expectations of teachers in the current era.

Integration of technology into learning and teaching settings has been emphasized by materials development researchers (Kervin & Derewianka, 2011; Motteram, 2011; Slaouti, 2013). Tomlinson (2013) calls attention to the need for novelty in materials development in language learning materials. He states that the last two decades have witnessed numerous advances in the way materials are delivered in commercial course packages. Previously, a course package mostly included a student’s book, a teacher’s book, and sometimes a workbook for additional practice. However, current course packages include electronic workbooks, teacher’s resource CDs and DVDs, interactive digital components provided on a DVD, and/or a website.

A good example of this is Inside Reading 4 iTools (Richmond, 2012) developed by Oxford University Press (OUP). Inside Reading 4 is used for reading classes at some colleges and universities including Iowa State University (ISU). Teachers who teach their reading course with this book are provided with the iTools DVD by OUP. Teachers use this DVD to install iTools, the teacher’s edition of the book to their computers. iTools is an interactive book in which a teacher can find the answer key of the exercises by clicking an answer-key icon right next to the exercises (see Figure 1), additional tests they can give to the students, PowerPoint presentations introducing reading strategies, as well as audio and video components. Teachers do not need to carry the printed book since they see the pages of the book in the iTools component.
Research shows that there are many more coursebooks like *Inside Reading*, most of which are supplemented by digital components (Allen, 2015).

![Reading Comprehension](image)

**Figure 1.** iTools, interactive teacher resources accompanying a reading book

Sonsaat (2016) showed that both native and non-native English-speaking teachers could benefit from immediately available support in their class preparation and teaching practices for pronunciation teaching. The fact that most of the teachers primarily consulted online materials whenever they needed help in explaining a pronunciation feature or in providing examples justifies the value and thus the need for web-based, online materials with multiple components.

These multicomponent materials must be something that teachers can access along with the student materials, namely the teacher’s manual. A carefully designed online teacher’s manual (OTM) may thus support teachers of various language and educational backgrounds who have different cognitions – knowledge, beliefs, and thoughts – in their pronunciation teaching.
1.3 Purpose of the Study

This study explores native and non-native English teachers’ cognitions about pronunciation teaching and pronunciation teaching materials; how they interact with an OTM, how useful an OTM can be in supporting their teaching practices and how influential it can be on their cognitions regarding pronunciation teaching. It expands Sonsaat (2016) in which I explored native and non-native English-speaking teachers’ cognitions about pronunciation teaching and pronunciation teaching materials, their expectations of a TM accompanying a pronunciation teaching book, and their attitudes towards a printed teacher’s manual (PTM) and online teacher’s manual (OTM) which were developed for the same pronunciation teaching book. Sonsaat (2016) constitutes the needs analysis part of this dissertation along with pre-use evaluation of two prototypical units of the PTM and OTM. It showed that most of the teachers liked the OTM more; therefore, the focus of this study is on the use of the OTM only.

In light of the previous study’s findings, this study focuses on the following aims:

**Aim 1**: Explore the usefulness of the OTM based on an in-use evaluation of materials by NESTs and NNESTs. Both groups of teachers’ attitudes towards the printed and the online teacher’s manual were investigated in Sonsaat (2016). Teachers reported their attitudes towards the manuals based on their evaluations after spending some time with both manuals and comparing them to each other. In this study, the usefulness of the OTM is explored based on an in-use evaluation of it by teachers. That is, participants of this study will be teaching with the student materials (Levis & Muller-Levis, n.d.) accompanied by the OTM and reflect on their experience with the manual. The purpose is to see whether an immediately available teacher’s manual is helpful and confidence-boosting in pronunciation teachers’ preparation and teaching practices. This requires exploring teacher behaviors in using the OTM and their reflections on it.
Aim 2: Investigate the effects of the OTM on teachers’ cognitions about pronunciation teaching. Teacher cognition research deals with teachers’ beliefs, knowledge, and thoughts about their subject field. This study investigates whether the use of an OTM leads to any changes in NESTs’ and NNESTs’ cognitions about pronunciation. In other words, does the use of an OTM lead to changes in teachers’ beliefs, knowledge and thoughts in pronunciation teaching? This requires comparing participants’ cognitions about pronunciation teaching before and after they use the OTM.

1.4 Significance of the Study

This study adds to the understanding of second language pronunciation teachers’ cognitions regarding pronunciation teaching materials. There have been several studies on teachers’ cognitions regarding various topics about pronunciation teaching (Baker, 2011a, 2011b, 2014; Burri, Baker, & Chen, 2017; Couper, 2016a, 2016b), however, none of these have addressed teachers’ cognitions specifically related to pronunciation teaching materials.

This study is innovative because it explores the usefulness of an online teacher’s manual for English pronunciation teachers, which has not been the case in any other research, and it carries pedagogical and technological design implications of both immediate and broader significance. Of immediate significance are the recommendations of this study’s findings that could be used to improve the design and usefulness of the OTM that was used in this study. The findings may reveal the difficulties teachers face while using the manual or indicate the areas where they need more support, so these may be addressed for enhanced usability. It may also show the truth of assumptions about what a teacher needs to feel more comfortable in teaching pronunciation. Findings of this study may provide valuable insights into future modifications of
the OTM (and other TMs) to ensure it is user friendly and provides helpful, understandable, and accessible support to both NESTs and NNESTs.

This study may also inform materials developers about the kind of support pronunciation teachers need for preparation and teaching, and how this support can be delivered in an innovative way with the help of technology. So, the findings may provide beneficial feedback for those designing similar materials. Tomlinson (2013) noted that innovation in materials is not welcomed very easily, but the findings of this study may give an idea about how much and what type of innovation teachers welcome for pronunciation materials. The findings may also give insights about pros and cons of providing an online teacher’s manual for pronunciation teaching and deciding how it may be more useful for their target users.

Lastly, this study is significant in that it fills a gap in materials development research in language teaching. There have been a few studies providing checklists to evaluate teachers’ manuals in language teaching (Cunningsworth, 1995; Donoghue, 1992) or evaluating the importance of certain criteria in a teacher’s manual (Kim, 2015), but no study, to the best of my knowledge, has ever conducted an in-use evaluation based on the feedback obtained from teachers. Additionally, none of these studies have focused on the evaluation of TMs designed for pronunciation teaching. Thus, this study attempts to address a gap in materials development research by accessing teachers’ insights about their experience with an OTM.
CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Materials encompass texts with any input presented in printed or electronic form (i.e. audio, video) and in language-learning tasks (Mishan, 2005). In other words, language materials are composed of texts delivered in different mediums and exercises and activities presented with them (Harwood, 2010). Textbooks, among all types of language teaching materials, are primary in many educational settings. They usually come with supplementary materials such as a teacher’s manual, CDs, DVDs, and among these, the teacher’s manual is a crucial component for many teachers. The first reason for it to be the case for many teachers may be that it includes an answer key for the tasks in the student’s material. However, a good teacher’s manual is more than that. The teacher’s manual can give an understanding about the author’s goals by developing the given book in the way it is (Burns & Hill, 2012). It is also supposed to provide guidance and support to teachers, not as a script but as a resource. In some countries, teachers’ manuals might provide more than support to teachers since they include descriptions about what to include in a given course, how things are supposed to be implemented in a class, and what method and evaluation techniques are to be used (Nazari, 2011).

About 20 years ago, Cunningsworth (1995) called attention to the fact that there could be places where people would have no access to any books or journals and they may have not be professionally prepared to teach. He suggested that teacher’s manuals (TM) might be an important source contributing to teachers’ professional improvement. Today, the number of people not having access to resources or training opportunities may not be as high as 20 years ago because of online access to numerous resources, including academic journals and online teacher training programs. Yet it is uncertain whether having access to various resources means
that teachers, especially in-service teachers who are not involved in any graduate level education, take advantage of them. Teacher training may also be more accessible in the current era, but it is shown that not every skill, such as pronunciation, is given an equal amount of attention in teacher training programs (Foote, Holtby, & Derwing, 2011).

Not being trained to teach a skill may be a reason for a teacher’s not feeling confident or competent enough. In turn, they may rely more heavily on teaching materials for their teaching, including teacher’s manuals. Unfortunately, lack of training is a frequently cited reason for teachers to be reluctant to teach some skills such as pronunciation (Breitkreutz et al., 2001; Burns, 2006; Macdonald, 2002), the skill focused on in this study. According to Derwing (2008, 2013), people who teach pronunciation are supposed to be those who are knowledgeable about second language acquisition and who have been trained in pronunciation, speaking, and listening. However, both Derwing and other researchers acknowledge that often it is not the case.

Other reasons contribute to teachers’ feeling less willing to teach certain skills. For instance, novice teachers, regardless of their language background, may feel nervous about uncertainties that may arise while they are teaching, about how to structure the course in general, about not having sufficient knowledge to explain content-related questions, or about not being able to create additional examples or exercises other than the ones provided in the student’s materials. When it comes to nonnative teachers, they may have other insecurities such as not trusting their knowledge for the correct answer of an exercise and take the author’s explanations as the authority.

In all these cases, teachers may turn to the teacher’s manual expecting to find help and guidance. Masuhara (2011), a materials development researcher who also taught English for more than 30 years, says if he had been asked what he wanted from a coursebook while he was
teaching English, his answer would have always been “I want coursebooks that are so engaging, inspiring, flexible and effective that I can teach without much extra work” (p. 236). What Masuhara asks for from a coursebook gives a feeling of security to a teacher in the sense that there is something they can hold on to and build on.

A useful TM provides effective back-ups and adjustments for the core materials, and if this is not the case or there is no TM, teachers will need to do all the required modifications for their own situation (Islam & Mare, 2003). Although it is assumed that all teachers must be able to adapt materials if necessary, it may not be a simple task (Samuda, 2005), especially for those who are new to the profession or who do not feel confident to do so for whatever reason.

Although the function of a TM is not to replace the role of a teacher by leaving no room for the teacher to take his/her own initiative, it should still provide help for teachers’ improvement in the subject matter and teaching pedagogy. A carefully designed TM may even help teachers increase their language awareness, which is defined as “the knowledge that teachers have of the underlying systems of the language that enables them to teach effectively” (Thornbury, 1997, p. x), and not be strictly dependent on the teaching material, but it should make instructors feel more competent to extend their teaching abilities by either carefully selecting different materials from different sources or even develop their own in time. Therefore, a helpful TM should not only provide answer keys for the exercises in the book but also guide teachers in knowledge of the subject matter and increase their language awareness. A TM should create a sense of security for language teachers, especially for less experienced, non-native or untrained teachers. Useful TMs do not create teachers who are dependent on overt guidance but contribute to their professional development and “help teachers develop towards an eventual position of self-reliance and independence of such explicit guidance” (Hemsley, 1997, p. 72).
A helpful TM can be only designed with a clear understanding of TCs – knowledge, beliefs, thoughts – about a given language skill. In return, a helpful TM may affect what teachers think about a topic and may help create new knowledge in a topic. The relationship between the use of a TM and TC can be bidirectional since both may affect and inform each other. Therefore, TC can be used as a framework to investigate teachers’ use of a TM. Changes in teachers’ knowledge, beliefs or thoughts after using an OTM may indicate how the OTM has affected their cognitions.

In addition, employing technology may help design a more useful TM which may go beyond the limits of traditional printed teacher’s manuals (PTM). PTMs have limited space and modalities and take more time and effort because of cross-referencing issues. Considering that publication houses do not like spending money on TMs, an OTM may help with cost and accessibility. Due to the real-data tracking programs, an OTM can also tell what features of the manual are most frequently used and helpful which may enable materials designers to improve the quality of the TM. While using an OTM may bring many advantages, an OTM’s perceived usefulness and teachers’ use of technology and may affect its use. Therefore, an OTM should be designed carefully by being aware of its potential strengths as well as weaknesses, and factors affecting teachers’ use of technology should be understood.

2.2 Teacher’s Manuals

To date, research has paid the most attention to teachers’ use of textbooks since textbooks are the prevalent material in language classrooms (Gray, 2010; Harwood, 2010; Katz, 1996; Lee & Bathmaker, 2007; Richards & Mahoney, 1996; Samuda, 2005; Tsui, 2003). Using a textbook may be rewarding time- and money-wise (Tomlinson, 2012) and assures that all students in a large education system are trained with the same goals to some extent (Byrd, 2001). In some
situations, a textbook even provides the curriculum of a course of study (Allen, 2015) and mostly accounts for what is done in the classroom (Byrd, 2001; Tomlinson, 2005). However, textbooks are either denounced or adored in teacher training programs (Canniveng & Martinez, 2003). The value given to textbooks ranges between two extremes as one side sees them as hindering the creativity of teachers (Bell & Gower, 1998; Bhola, 1999; Byrd, 2001) and the other sees them as an indispensable component of classroom teaching (Sheldon, 2009). This is partially because of how teachers interact with the textbooks.

Shawer (2010) classifies teachers into three groups based on their curriculum approaches, and defines each group according to certain criteria including the use of textbooks. He proposes that some teachers strictly follow a single textbook (curriculum-transmitters), some adapt it based on the needs and supplementing it by other textbooks and materials (curriculum-developers), or some develop all materials by themselves (curriculum-makers). Research shows that most experienced and confident teachers are comfortable with changing things in a textbook and cherry-picking what looks best for their context from a textbook, so they use a textbook as a “resource rather than a script” (Tomlinson, 2012, p. 272). Yet, less experienced or less confident teachers depend on textbooks more strongly in their teaching (Allen, 2015; Tsui, 2003) and do not question the expertise of the textbook authors (Gray, 2010). If teachers tend to be textbook-dependent for whatever reason, they will most probably use the teacher’s manual of the book as well (Watanabe, 2001).

Despite their importance, TMs have never drawn much attention in materials development, and therefore they have not been researched from the perspective of pronunciation teaching. This may be the case because they have not been perceived as having a role more than being an answer key for student materials (Sheldon, 1987) or because they have been perceived
negatively as something hindering the creativity of teachers. However, depending on teachers’ training, experience, and knowledge, and the way TMs are approached, TMs may help rather than inhibit teachers’ creativity.

Some teachers, especially preservice teachers, may think being a good teacher means not following a textbook or teacher’s manual but creating your own materials (Loewenberg-Ball & Feiman-Nemser, 1988). However, research shows that teachers, specifically new teachers, learn from published materials (Collopy, 2003; Grossman & Thompson, 2008) and learning from available materials until they feel comfortable adapting or creating their own materials can decrease their anxieties about teaching.

TMs can be helpful for teachers’ ongoing professional development since the initial training teachers received during their pre-service education might have had its own limitations (Donoghue, 1992). Language teaching materials and teachers’ manuals may specifically be beneficial for NNESTs since they can contribute to these teachers’ language competence and confidence which could help them gain materials adaptation skills in time and paradoxically, be less dependent on published materials (Coleman, 1985). TMs decrease the amount of preparation time teachers spend on materials and the absence of a TM can make the student material more challenging to work with for a teacher (McDonough, Shaw, & Masuhara, 2013).

Even if the function of a TM is not taking the role of a teacher by leaving no room for the teacher to take his/her own initiative or leave no need for preparation, it should provide help for teachers’ improvement in the subject matter and teaching pedagogy.

Despite their crucial role in supporting teachers, TMs are given less attention by publication houses as well. This may be because TMs are occasionally given as free components of a course package. There are even cases that a TM is not published at the same time as the
student material it is supposed go with. This is obvious from a question Sheldon (2009) included in his criteria focusing on the evaluation of TMs: “Has there been an inordinate delay between the publication of the student’s and teacher’s books which has meant that teachers have had to fend for themselves in exploiting the materials?” (p. 387).

Some influential studies focusing on materials evaluation questioned whether a coursebook was accompanied by a teacher’s manual or not since they asserted the existence of a TM contributed to the good implementation of student materials (Crawford, 2002; McGrath, 2002; McDonough, Shaw & Masuhara, 2013). However, the surprising fact about these studies is that they did not provide much discussion about the quality of a TM, although they highlighted its importance.

2.2.1 Evaluation of Teacher’s Manuals

Materials evaluation is important to improve the quality of available language teaching materials, and there have been numerous checklists created to evaluate student materials. Mukundan and Ahour (2011) analyzed 48 textbook evaluation checklists published from 1970 to 2008. Nine of these checklists (~ 19%) dealt with TMs either as a component of the coursebook selection criteria (Daoud & Celce-Murcia, 1979; Dougill, 1987; McGrath, 2002; Miekley, 2005; Skierso, 1991) or as an individual topic by itself (Cunningsworth, 1995; Cunningsworth & Kusel, 1991; Hemsley, 1997). These statistics reveal how little attention TMs draw.
Table 1. Summary of TMs Evaluation Criteria

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</table>

Table 1 summarizes the studies that created detailed TM analysis checklists (Coleman, 1985; Cunningsworth, 1995; Cunningsworth & Kusel, 1991; Donoghue, 1992; Hemsley, 1997; Miekley, 2005; Skierso, 1991). There are also several other studies which briefly mentioned the
importance of TMs by raising a few questions but these studies only treated TMs peripherally (e.g., Dougill, 1987; McDonough & Shaw, 2003; McDonough, Shaw, & Masuhara, 2013; McGrath, 2002; Mukundan, Nimenchisalem, & Hajimohammadi, 2011; and Nimenchisalem & Mukundan, 2015; Sheldon, 2009).

Although there are some differences among the criteria from Coleman (1985), Donoghue (1992), and Cunningsworth (1995), they all emphasize that TMs must explain the authors’ approach to the nature of language and language teaching, how to implement the chosen approach in teaching, and cultural content. Additionally, most studies highlighted the importance of providing an ‘absolute’ answer key which does not lead to any ambiguity due to open-endedness or unpredictability of the answers. Guidance on assessing learners’ improvement and how to provide feedback is another criterion that is named to be important in most of these studies. A user-friendly layout and navigation are also among the criteria these the three researchers argued for.

Unlike the guidelines given by the first three authors in Table 1, Hemsley (1997) and Miekley (2005) developed TM evaluation checklists for specific language skills since they believe additional criteria must be added when addressing particular skills. Hemsley (1997) proposed global and detailed evaluation questions (N=28) for TMs designed for conversation skills courses. However, most of the questions in this evaluation checklist were similar to the evaluation criteria for TMs designed for general skills books; only two questions were more related to conversation skills: “Does the TG focus on one variety of English to the exclusion of others?” and “Does the TG aim to maximize learners' opportunities to develop sociopragmatic and strategic competencies?” (pp. 76-77).
Miekley (2005) developed a textbook evaluation checklist for reading skills based on research findings and previously created evaluation lists, and devoted a section regarding the TM in the list. Compared to the checklist presented in Hemsley, Miekley’s checklist was more specific for the skill under focus, reading. It included questions regarding the use of vocabulary, morphology, and reading strategies and whether teachers were provided with enough examples to teach these.

A common point that most studies in Table 1 emphasize is the different needs of teachers of various language and educational backgrounds. They assert that materials developers oftentimes overlook the challenges that NNESTs, less experienced teachers, or teachers without sufficient training may face (Coleman, 1985; Cunningsworth, 1995; Cunningsworth & Kusel, 1991; Skierso, 1991). For instance, NESTs and NNESTs may be good at different parts of teaching, but need help for other things, which shows that teachers of different backgrounds may have different requirements for a good TM (Skierso, 1991). A TM should be designed carefully by taking different populations’ needs into consideration, that is, by focusing on the needs of teachers who may not have the desired level of training, knowledge, and confidence (Cunningsworth & Kusel, 1991).

In summary, what Table 1 suggests for materials designers to consider and for teachers to look for is that a TM should provide guidance on certain things for it to be influential and not be limited to being simply answer key. According to the most common criteria presented in Table 1, the guidance expected from a TM can be provided through the presence of the following features:

- explanations and justifications of the teaching approach followed by the book
- explanations for content which may not be familiar or clear to all (i.e., cultural content)
• teaching tips providing suggestions about how to introduce teaching topics
• explanations regarding the exercises in the book and exercises in addition to the ones in the student book
• explanations related to learner difficulties
• suggestions about assessment and provision of feedback
• a clear design and layout making cross-referencing easy

Among all researchers presented in Table 1, Cunningsworth (1995) provided the most comprehensive list for the evaluation of TMs and Kim (2015) explored how important each of Cunningsworth’s criteria was for Korean pre-service and in-service teachers. Based on Kim’s findings, having a layout for each lesson is the most important feature for all teachers. Matching the content in the student’s material and the TM – cross-referencing, providing an extensive and adaptable content, informing about learners’ struggles, and providing precise instruction and suggestions are the next most important features for teachers. Providing the answer key for exercises in the textbooks was surprisingly not one of the most important things for teachers, though not completely unimportant by having the 7th place in the order of importance. What is most surprising is that the appropriateness of the TM for NNESTs is almost the last important feature for teachers although all respondents in this study are NNESTs.

To date, no study has proposed criteria for TM evaluation for materials designed for pronunciation teaching. However, it is clear that there is a need considering the challenges teachers have in teaching pronunciation. The potential benefits of a carefully designed pronunciation TM cannot be underestimated, for it can provide a great amount of support for all kinds of teachers. A helpful TM for pronunciation teaching should be written in a way that builds TC, especially for teachers who are new in the profession, who are not trained for pronunciation teaching, or who do not have sufficient knowledge of and confidence in pronunciation teaching.
To build a helpful TM for pronunciation requires a deep understanding of TCs in pronunciation teaching.

Research shows that curriculum materials, including TMs, have an educative role and may have a positive impact on teachers’ learning (Collopy, 2003; Grossman & Thompson, 2008). Therefore, TC research is an appropriate framework to investigate how teachers use teaching materials, the OTM in this case, and whether the use of teaching materials create new knowledge or change what they think about pronunciation teaching. TC research and use of materials by teachers can both inform each other since they are both affected by each other.

2.3 Teacher Cognitions

Teacher cognition (TC) research deals with teachers’ mental constructs including thoughts, knowledge and beliefs (Borg, 2003). The research literature uses both cognition and cognitions, but in this study I will use the term ‘Teacher Cognition’ to refer to the research area and ‘Teacher cognitions’ to refer to individual aspects included in TC research. TC research dates back to the 1970s (Clark & Yinger, 1977; Dunkin & Biddle, 1974; Shulman & Elstein, 1975). In 1975, a report presented by a group of researchers at the conference organized by the National Institute of Education underscored the link between teachers’ behaviors and thinking. This, according to Borg (2015), marks the beginning of TC research. Earlier in 1975, Shulman and Elstein had argued that teachers’ thoughts about their learners and teaching problems were missed in research while attention was almost always paid to teachers’ classroom behaviors. The authors called attention to the resemblance between a physician and teacher in the sense that both make decisions based on judgment and information processing. Based on the review of research on psychological studies on problem solving, judgment and decision making, the authors proposed implications for educational contexts. In the early 1970s, TC research was usually
referred as ‘teacher thinking’ research by many scholars. The assumption about the influence of teachers’ thoughts on their behaviors was a new trend in teaching and it involved focusing on teachers’ cognition, or their mental lives. It was asserted that research focusing on teachers’ mental lives taught us about their planning, judgment, and decision-making processes as well as their implicit theories and perspectives (Clark & Yinger, 1977).

In the 1990s, research on different aspects of TC occurred with the work of Carter (1990) on teachers’ knowledge, Pajares’s (1992) seminal work on beliefs, and Calderhead’s (1996) work on teachers’ knowledge and beliefs. Knowledge, as the most attention-taking aspect of TC, has been researched by many scholars in TC and other related areas such as teacher language awareness (Andrews, 2007). Shulman (1986, 1987) divided teacher knowledge into seven areas: subject-matter 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. Among these, subject-matter content knowledge and pedagogical content knowledge (PCK) have been influential in TC research. Subject-matter content knowledge refers to not only having a command of specifics of a domain but also knowing how concepts are related to each other; it requires being able to tell what features are important to know in a domain and why (Shulman, 1986). In PCK, teachers should not only have a good command of subject matter knowledge of their discipline (content) but also the methods to teach it (Shulman, 1986). A teacher having good PCK should be able to explain concepts of a domain by using clear explanations and examples in a way that it is understandable to the students. In short, subject-matter content knowledge is related to the definition of facts in a domain, that is, “what” part of a domain, whereas PCK is about “how to teach” the content.
Teachers’ beliefs, another aspect of TC, are complex in nature and intertwined with teachers’ knowledge. Pajares (1992) provided the most comprehensive and concise definition of teachers’ beliefs to date although he warns about this construct’s being overly vast. What Pajares involves in his definition are educational beliefs in relation to teachers’ confidence to achieve particular tasks and to influence students’ performance (self-efficacy), the essence of knowledge (epistemological beliefs), the reasons of student’ and teacher’ acts (i.e., motivation, anxiety), an image of self (self-concept, self-esteem), and particular subjects and areas.

Research into teachers’ thoughts are mostly dominated by research into teachers’ beliefs since beliefs and thoughts overlap to a great extent. It is also hard to indicate a clear-cut division between beliefs and thoughts since one entails the other. Pajares (1992) proposes that “thought processes may be precursors to and creators of beliefs, but the filtering effect of belief structures ultimately screens, redefines, distorts, and reshapes subsequent thinking and information-processing” (p. 325). In other words, research has not successfully distinguished the two areas.

2.3.1 Factors Affecting Teacher Cognition

Borg (2015) asserted that “teacher cognition can thus be characterized as an often tacit, personally held, practical systems of mental constructs held by teachers and which are dynamic – that is defined and refined on the basis of educational and professional experiences throughout teachers’ lives” (p. 40). Additionally, Feryok (2010) noted “they [teacher cognitions] can be complex, ranging over several different subjects; they can be dynamic, changing over time and under different influences; and they can be systems, forming unified and cohesive personal or practical theories” (p. 272). Borg and Feryok underlined the fact that teacher cognitions are dynamic and that they are affected by many factors as they reshape and develop.

Teacher training is one of the most extensively researched factors in shaping TCs. Although there are some studies showing little or no influence of teacher training on TCs (Lo,
2005; Peacock, 2001), others show a clear impact. Busch (2010) explored the effects of an SLA course on pre-service teachers’ (N=381) beliefs and reported that there were significant changes in teachers’ pre-existing beliefs and knowledge because of the course. Some of the reasons for teachers’ changing beliefs were accounted for by the tutoring project as a required component of the course and course reading materials. In a small-scale longitudinal study (Wyatt & Borg, 2011), changes in in-service teachers’ (N=3) existing beliefs, practical knowledge, and teaching practices, especially in terms of integrating communicative tasks, were observed during a BA TESOL education program over three years. The authors reported the positive impact of the TESOL program on teachers’ cognitions as teachers’ awareness improved about their learners and their practical knowledge increased in relation to communicative tasks. However, the authors noted that the improvement was not equal for all teachers, a difference they attributed to teachers’ individual differences.

Context is a strong factor in TC development and change. The importance of context has been emphasized mostly because of the mismatch between teachers’ stated cognitions and their teaching practices (Kubanyiova & Feryok, 2015). Kurihara and Samimy (2007) investigated the effects of an overseas (U.S.) teacher-training program on Japanese in-service English teachers’ (N=8) beliefs and knowledge upon their return to their own teaching contexts. Although teachers in this study reported improvements in their English teaching practices as being more communicative, they still acknowledged the constraints in changing their usual teaching styles because of educational and social contexts as well as the expectations of the students. This study’s results are important in understanding that teachers’ beliefs and thoughts may not necessarily be reflected in their teaching because of contextual factors which means changing cognitions may not guarantee changing instructional practices. Cross (2010) and Feryok (2010)
acknowledge the strong influence of context in TC and propose their own frameworks to analyze TC taking context into account.

Prior learning experiences are also among the dominant factors on TCs and teaching practices (Freeman, 2002). Research shows that teacher trainees tend to go back to the teaching styles they were accustomed to as learners once they are done with their teacher education program, and as a result, teacher training programs are criticized for creating little impact on teacher candidates (Borg, 2004). Lortie (1975), who coined “the apprenticeship of observation” term, pointed out that students get to see what a teacher does in the classroom but they do not get to see the processes a teacher goes through before class. In a study conducted by Richards and Pennington (1998), the teaching practices of five novice teachers were observed for their first year. These teachers reported going back to the traditional teaching methods as they were taught before although their teacher training program adopted more of a communicative approach to language teaching. One of the teachers in Couper (2016b) noted that the pronunciation teaching techniques she used did not come from her teacher training but from her primary school training.

Teaching experience is also shown to be effective on changes in TC (Gatbonton, 2008; Tsui, 2003). Research focusing on the comparison of novice and experienced teachers is important as it can show the development of TC. Borg (2015) suggests that the development of TCs can be analyzed by focusing on “preactive and interactive phases of teaching” (p. 125). He asserts that less experienced teachers may wish for a more well-organized lesson plan and make fewer spontaneous decisions during their teaching. It is shown that experienced teachers’ pedagogical knowledge is more constant and less changeable compared to novice teachers (Gatbonton, 2008). Novice teachers’ lesson plans are more rule-based and they have a chance to experience problems when unplanned contextual factors interrupt with their original plan. Yet
experienced teachers are more aware of their contextual factors and their planning and teaching processes are more automatized and open to changes depending on learners’ needs (Tsui, 2003).

Other factors that are influential on TC include interactions with colleagues (Barnard & Burns, 2012), pre-existing beliefs (Burri, Chen, & Baker, 2017), perceptions related to self and others (Burri, Chen, & Baker, 2017), personal traits (Burns & Knox, 2011), following research and attending professional organizations like conferences and workshops (Barnard & Burns, 2012), and student expectations (Feryok, 2008). Teaching materials, including TMs, can be influential on TCs based on research which shows that curriculum materials may have an educative role (Collopy, 2003). However, no research has focused on the influence of TMs on TCs so far. This study fills this gap by investigating how using an OTM can affect the way teachers think about pronunciation teaching or how their knowledge and confidence can be affected by it.

2.3.2 Teacher Cognition in Pronunciation Teaching

TC has had an expanding body of research for more than 30 years, and there is abundant research for some language skills, especially for grammar teaching (Borg, 2003; Farrell & Lim, 2005; Phipps & Borg, 2009). However, there is little research on pronunciation teachers’ cognition. What is reported in relation to teachers’ cognition in pronunciation is about their beliefs and thoughts on issues such as who would be best to teach pronunciation (Derwing, 2008; Foote, Holtby, Derwing, 2011), what variety of English should be the model in pronunciation teaching (Jenkins, 1998; Walker, 2010); whether they believed pronunciation instruction leads to improvement (Couper, 2006), and whether they preferred and liked pronunciation teaching (Foote, Holtby, & Derwing, 2011).
Table 2. Teacher Cognition Research in Pronunciation Teaching

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Topics</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burri, Chen, &amp; Baker</td>
<td>2017</td>
<td>Identity construction and cognitive development</td>
<td>ESL - Australia</td>
</tr>
<tr>
<td>Burri, Baker, &amp; Chen</td>
<td>2017</td>
<td>Effect of teacher education on teachers’ beliefs and knowledge</td>
<td>ESL - Australia</td>
</tr>
<tr>
<td>Couper</td>
<td>2016b</td>
<td>Knowledge, perceptions, concerns and issues about pronunciation teaching</td>
<td>ESL - New Zealand</td>
</tr>
<tr>
<td>Couper</td>
<td>2016a</td>
<td>Teacher anxiety about pronunciation and pronunciation teaching</td>
<td>EFL - Uruguay</td>
</tr>
<tr>
<td>Lim</td>
<td>2016</td>
<td>Pronunciation instruction and classroom practice, English as a Lingua Franca</td>
<td>EFL - Cambodia</td>
</tr>
<tr>
<td>Burri</td>
<td>2015a</td>
<td>The effect of a post-graduate course on student teachers’ cognitions regarding pronunciation pedagogy</td>
<td>ESL - Australia</td>
</tr>
<tr>
<td>Burri</td>
<td>2015b</td>
<td>The effect of a post-graduate course on student teachers’ cognitions regarding the goal of pronunciation instruction: NNE varieties</td>
<td>ESL - Australia</td>
</tr>
<tr>
<td>Yunus, Salehi &amp; Amini</td>
<td>2016</td>
<td>Pronunciation teaching techniques</td>
<td>EFL – Iran</td>
</tr>
<tr>
<td>Baker</td>
<td>2014</td>
<td>Pronunciation teaching techniques</td>
<td>ESL</td>
</tr>
<tr>
<td>Baker</td>
<td>2011b</td>
<td>Influence of research on pronunciation teaching</td>
<td>ESL</td>
</tr>
<tr>
<td>Baker</td>
<td>2011a</td>
<td>Relationship between TCs and pronunciation instruction</td>
<td>ESL - USA</td>
</tr>
<tr>
<td>Foote, Holtby &amp; Derwing</td>
<td>2011</td>
<td>Pronunciation teaching practices and TCs about pronunciation teaching and pronunciation teaching materials</td>
<td>ESL – Canada</td>
</tr>
<tr>
<td>Burns</td>
<td>2006</td>
<td>TCs regarding pronunciation teaching</td>
<td>ESL - Australia</td>
</tr>
<tr>
<td>Jenkins</td>
<td>2005</td>
<td>Teachers’ attitudes on ELF pronunciation and teacher identity</td>
<td>EFL &amp; ESL</td>
</tr>
<tr>
<td>Macdonald</td>
<td>2002</td>
<td>Views on teachers’ reluctance to teach pronunciation</td>
<td>ESL - Australia</td>
</tr>
<tr>
<td>Sifakis &amp; Sougari</td>
<td>2005</td>
<td>Teachers’ beliefs regarding accent, pronunciation teaching practices, and ownership of English</td>
<td>EFL – Greece</td>
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<tr>
<td>Timmis</td>
<td>2002</td>
<td>Teachers’ attitudes towards native-speaker norms in pronunciation teaching</td>
<td>EFL &amp; ESL 45 countries</td>
</tr>
<tr>
<td>Breitkreutz, Derwing &amp; Rossiter</td>
<td>2001</td>
<td>Pronunciation teaching practices and materials</td>
<td>ESL – Canada</td>
</tr>
</tbody>
</table>

Table 2 presents the research related to TC in pronunciation teaching, along with the country of the research if known. A careful look at this research shows that studies before Baker (2011a) have concepts connected to TC but the authors of these studies do not connect their
research to TC overtly. However, studies starting with Baker (2011a) clearly emphasize TC as the umbrella concept and use it as the framework of the study. This clear change in recent research signals that TC in pronunciation teaching started to gain more visibility compared to the past.

Several studies have indicated teachers’ mixed feelings about using native speakers as the normative model for pronunciation teaching. Teachers mostly report support for intelligibility and comprehensibility as the goal of pronunciation teaching and support English as a Lingua Franca (ELF) and English as an International Language (EIL) approaches; however, in practice they mostly prefer to rely on the native speaker norm-based instruction (Jenkins, 2005; Sifakis & Sougari, 2005). Some teachers who set “accented intelligibility” (p. 243) as the goal for their students do so not because that is what they prefer but because it seems to be a more rational expectation (Timmis, 2002). Although teachers believe in their skills and legitimacy to teach English pronunciation as non-native English-speaking teachers and acknowledge intelligibility as the goal of pronunciation instruction, they are not willing to introduce the non-native English variety of their own setting to their students (Lim, 2016). Research shows when teachers are not confident with their own pronunciation as a model, they tend to omit teaching the pronunciation features they do not feel competent at (Couper, 2016a). This norm-based teaching tendency brings up the question of whether it is possible to change teachers’ cognitions about the value of English varieties. Burri (2015b) reported that group work discussions in a graduate level course had an impact on teacher trainees who took the goal of pronunciation instruction more as accent reduction at the beginning of the course. At the end of the course, teacher trainees were more aware of the value of English varieties in teaching pronunciation.
Other factors that are influential on TC have been researched by pronunciation researchers more extensively. These factors involve taking a graduate level course (Burri, 2015a, 2015b; Burri, Baker, & Chen, 2017), following research and conferences, teacher education, teaching experience (Baker, 2011b; Yunus, Salehi, & Ameni, 2016), reflective practices (Baker, 2011b), and textbooks (Baker, 2011b).

A graduate level course was shown to be influential on TCs in two studies (Burri, 2015a, 2015b). The first of these studies indicated that a graduate level course could change teachers’ thinking towards the purpose of pronunciation instruction as the participants acknowledged that the goal of pronunciation teaching is not supposed to be “accent elimination” (p.18). In the subsequent study (Burri, 2015b), the graduate level course was influential on teachers’ moving from mostly segmental-oriented teaching to a more balanced teaching approach, including both segmentals and suprasegmentals.

Another study showed the impact of a graduate level course on pre-service and in-service teachers’ cognitions although it remained limited (Burri, Baker, & Chen, 2017). A crucial finding of this study is that all teachers, regardless of their language background, had difficulties with the dense content of the pronunciation course they took. Some topics – especially intonation – were harder for teachers. Both pre-service and in-service teachers found it challenging to hear intonation patterns, and this was especially true for pre-service and native English-speaking teachers who did not have previous pronunciation teaching experience.

Baker (2011a) investigated pronunciation teachers’ beliefs and knowledge and the relationship between five teachers’ cognitions and their pedagogical practices. She focused on these teachers’ cognition developments stemming from learning and teaching experiences and teacher education. Baker found that teacher education, especially graduate level programs having
a course devoted to pronunciation pedagogy, had the most crucial role in forming teachers’
cognitions and that teachers who had training in pronunciation pedagogy employed several
different styles to teach pronunciation compared to the teachers who were not trained for
pronunciation teaching. Baker discovered that lack of education in this area may account for a
limited knowledge of pronunciation pedagogy and limited confidence in pronunciation teaching.

In a subsequent study, Baker (2011b) explored the effect of prosody-related research on
ESL teachers’ knowledge and beliefs about teaching prosody to find out what method teachers
thought was the most influential on their improvement of the knowledge base of pronunciation.
Baker found that pronunciation research changed some teachers’ teaching practices and their
prioritization of pronunciation teaching goals. This was especially the case with teachers who
had been in a graduate program that had a pronunciation related course. Baker warned, however,
that education may not be sufficient for some teachers to gain confidence to teach certain
pronunciation skills. Another result showed that some teachers could clearly see the important
points addressed in research, but they were not quite sure about how to use research findings in
their classroom teaching. One of Baker’s participants stated that he liked a conference
presentation he attended, yet he did not know what to do with what he learned. This finding
shows the importance of providing practical implications for practitioners, explicitly explaining
what research findings mean for their teaching practices.

Teaching techniques have also been one of the most frequently explored topics in TC
research in pronunciation teaching. Baker (2014) examined the relationship between teachers’
beliefs, knowledge, perception, and attitudes of pronunciation teaching techniques and their
actual classroom practice of using these techniques. She reported that controlled activities were
predominantly used by all teachers, and guided practice was less frequently used, even by the
teachers who took a course related to pronunciation pedagogy. In the same study, Baker explored teachers’ beliefs regarding the role of perception for comprehensible speech, and the effect of kinesthetic/tactile practice on phonological improvement. Her findings indicated that the use of listening discrimination activities and kinesthetic/tactile practice were evident in teaching practices of the teachers who expressed belief in the effectiveness of these techniques. Baker’s (2014) results are supported by a following study in which researchers reported that although teachers employed all types of pronunciation teaching techniques including controlled, guided, and free, they most dominantly used controlled activities (Yunus, Salehi, & Amini, 2016). As in Baker’s study, the use of guided activities was more limited.

Other studies about TC in pronunciation focus more on teachers’ overall thoughts, beliefs and knowledge about pronunciation and investigate why teachers were not more enthusiastic about pronunciation teaching, what they found challenging in pronunciation teaching, what pronunciation features they addressed in their teaching, what uncertainties and confidence issues they had, and how they integrated pronunciation into their teaching.

According to the results of a survey-based study conducted in Canada, teachers were enthusiastic for a balanced teaching approach combining both segmentals and suprasegmentals; however, when asked about the most effective way to deal with communication problems, they said working on the problem-causing sounds would be the best way to address those issues (Breitkreutz, Derwing & Rossiter, 2001). In addition, most of the teachers reported using computer programs to teach pronunciation but these focused mostly on teaching segmental sounds. Some teachers expressed surprise at not having suprasegmental features such as linking, stress, and intonation in the materials. Additionally, the authors criticized one book,
“Pronouncing American English: Sound, stress and intonation” (Orion, 1997), for having a misleading title since it focused mostly on the teaching of segmental pronunciation features.

In another study, teachers stated that their teaching curricula did not motivate them to teach pronunciation and therefore it was an easy skill to skip (Macdonald, 2002). Teachers also expressed difficulties in diagnosing students’ pronunciation problems unless there was a clear problem hindering teachers’ understanding of a student. This approach to teaching showed that pronunciation was not integrated into teaching, but it was addressed if only there was a need for it because of a communication breakdown. More recent research (Couper, 2016b; Lim, 2016) corroborated the previous study’s findings, as pronunciation still seems to be addressed by teachers only if it is necessary because of a noticeable pronunciation error.

In more recent research, most teachers’ pronunciation training relied mostly on phonetics and phonology but not how to teach pronunciation (Couper, 2016a). Although pronunciation is related to phonetics and phonology, the content knowledge of the two is quite different, and training in one area does not mean that teachers will understand the other. Additionally, teachers stated that they lacked knowledge for certain pronunciation features: intonation and stress. In a following study (Couper, 2016b) Uruguayan teachers expressed similar concerns. Teachers, especially those who were not confident in their own pronunciation, chose not to teach certain suprasegmental features such as intonation and stress. One of the teachers said, “I don’t feel confident in intonation so it’s better not to teach it” (p. 38). Teachers in both studies asserted that they needed to know how pronunciation works and how it could be taught, especially in classes where there are students from different L1 backgrounds. Some teachers expressed their lack of competence in explaining what is problematic in students’ pronunciation and their need to learn methods to do so (Couper, 2016b). This indicates that the knowledge base of teachers is an
important factor contributing to teachers’ confidence or lack of confidence. In Baker (2011a), four teachers with graduate level training expressed confidence in teaching pronunciation, whereas one teacher, who had no graduate level training, expressed insecurity in teaching pronunciation although she had done it four times before.

Burns (2006) differs from all the other studies in the sense that it not only explores TCs regarding various pronunciation related topics but it also reports on professional development materials produced relying on the information obtained in the study. In the first part of the study, findings of a survey obtained from 143 teachers in Australia showed that (a) segmental pronunciation features were taught more often than the suprasegmental features; (b) some teachers were less certain about teaching suprasegmental features in spite of being confident in teaching pronunciation overall; therefore, they asked for more materials for professional development; and (c) teachers dealt with pronunciation if only it impeded fluency and intelligibility.

Based on the findings, Burns prepared the various resources the teachers asked for. A number of preselected teachers in the study had discussion groups in which they came up with the idea of producing a professional development package for teachers, and this package would include videos along with a teacher’s manual. The videos created by the group of teachers and the researcher exemplified classroom tasks for sounds, word stress, linking, and intonation patterns. The handbook supplementing the videos explained the theoretical background of the topics presented in the videos and presented information about how they related to each other in addition to a sort of lesson plan accompanied by sample teaching materials.

TC research in pronunciation has gained more visibility, especially in the last decade as researchers have examined various topics such as teachers’ knowledge and confidence about
pronunciation teaching, willingness to teach pronunciation, concerns and anxieties about pronunciation teaching as well as pronunciation teaching techniques used by teachers and the factors affecting TCs in pronunciation teaching. In relation to the factors that influence TCs, researchers have focused on the effects of graduate level courses, research, professional workshops and conferences, prior learning and teaching experience, and external factors such as time and curriculum. However, there is no research exploring the influence of teaching materials on teacher cognitions and practices. Materials have been included mostly as a minor subtopic in some TC-related studies, mostly not as a research question but as part of the discussion. Couper (2016a) suggests that textbooks may be an influential factor in what is prioritized in pronunciation teaching because teachers are inclined to go by what they have in the textbook when they have time limitations. Nine teachers in Couper’s study agreed that textbook may control teaching. Macdonald (2002) had a similar finding as he said teachers’ desire was to have “off-the-shelf materials that do not require adaptation” (p. 12).

Despite TC research in pronunciation having gained importance in the last decade, there is still no research focusing directly on (i) what teachers know and think about available materials; (ii) what sources they use to teach pronunciation; (iii) and what they would expect from a TM to support them in their pronunciation teaching. Therefore, the purpose of this study is to investigate the issues raised above and to explore how a TM affects pronunciation teachers’ cognitions.

As indicated by the research studies on pronunciation teacher cognitions, even teacher training might not ensure that teachers feel confident about some features of pronunciation. In such cases, TMs may be helpful in providing the support teachers need by going beyond being an answer key to the exercises in the student’s materials. To design a helpful TM requires
understanding teachers’ cognitions about pronunciation teaching and what makes it easy or challenging for them to teach pronunciation. Teachers’ cognitions about pronunciation teaching materials should also be investigated to see what teachers would need in an ideal TM and what their expectations would be from such a manual.

### 2.4 Technology in Materials Development

Technology has contributed to materials development and made both publishers’ and teachers’ jobs more challenging because of the increasing number of supplementary components a course package may have. It would be impossible for some old books to survive in today’s market because providing free additional materials seems to be a must to compete in this race (Littlejohn, 2011). However, this requires teachers to be more critical in materials selection so they are not deceived by fancy visual design which may not necessarily be helpful for teaching. This may be a minor disadvantage of having various sorts of both print and digital materials.

However, the advantages that technology brings to language teaching materials are greater than its potential and avoidable challenges. Technology can actually overcome some limitations of print materials. Once teaching materials are printed, they are difficult to change, correct, or update before the next edition, so there is no chance to make them better. Feedback that materials developers may collect from users (learners and teachers) is only helpful for a future edition. However, online language teaching materials do not have this limitation since updating online materials is a realistic task for developers. Any errors in online student materials or teacher’s resources can be corrected the moment they are noticed. This makes materials evaluation more worthwhile since user feedback can immediately be utilized for the improvement of the materials.
There are numerous digital technology-based materials in the current era, and teachers even supplement their course materials with things they find on the Internet. Digital technologies contribute to authenticity, interaction, and better practice in particular skills such as speaking (Kervin & Derewianka, 2011). Tomlinson (2011) mentions possible ways of using mobile phones with language teaching purposes. Allen (2015), Motteram (2011), Slaouti (2013) and Tomlinson (2013) are among the researchers reporting on the role of digital technologies in materials development.

There are clearly several benefits of technology from the learners’ perspective, but technology can be used for the benefit of teachers as well. Sonsaat (2016) suggested that an OTM can be more effective than a printed TM in supporting teachers. Thus, this study focuses merely on the effectiveness of an OTM. OTMs have many advantages compared to a PTM.

2.4.1 The Effectiveness of an OTM

One of the biggest strengths of an OTM is being able to present information in different modes (i.e., verbal, non-verbal) and modalities (i.e., auditory, visual). Multimodality can be useful in reducing the cognitive load and lead to better learning (Low & Sweller, 2005). Presenting content knowledge in multiple modes may benefit teachers’ learning as well. Pronunciation is a skill for which multimodality is especially important. Understanding how a segmental or a suprasegmental pronunciation feature is produced may be easier when information is presented not only in written but also spoken and visual forms. This can be achieved by integrating instructional videos into an OTM. Additionally, pedagogical videos showing how a pronunciation skill can be taught may be very useful some teachers, especially for novice teachers.

Videos can be a limitation as well as a strength if certain design issues are not considered in advance. To increase the usability of videos, it is a must to include control buttons helping with
play, pause, and navigation features (Chorianopoulos & Giannakos, 2013). Also, depending on the video integration style, embedded into a page as an HTML video or linked, certain browsers may force users to download the video to see it while others may not. In both cases, file size of a video affects the time users need to wait to see the video based on their Internet speed. In the cases teachers do not have access to good Internet connection or do not like downloading a video to their computers, the video may be a limitation rather than a strength.

Being able to integrate clickable words into an online platform is another strength for an OTM, and this is a feature many teachers liked in Sonsaat (2016). When teachers use a printed teacher’s manual, they either have to use a CD or go to a website to download audio files. In both cases, they need to match the files with the content. In an OTM, it is possible to link audio files to relevant words or sentences; thus teachers click on them to listen to the pronunciation of them. This is a feature that may save time and is more functional and practical for teachers’ use.

Accessibility of an OTM is another feature which can be a strength depending on the context. If a teacher has reliable Internet connection and a computer or a handheld device, the OTM has no accessibility issues. In such cases, using an OTM is more practical than carrying a printed manual. Some teachers in Sonsaat (2016) mentioned that they did not carry the TMs with them all the time, and if they needed to check something they simply could not because they did not have the TM.

One of the clear limitations of an OTM is that it is not physical, that is, teachers cannot highlight, underline or annotate anything on the manual. It is true that some people like the physical aspect of a book. For instance, although there are lots of advantages of e-books such as being less expensive, easier to carry, and searchable, a recent study (Tosun, 2014) shows that only 20% of 258 teacher trainees preferred e-books over printed books. However, this limitation
can be addressed to a great extent by sharing the content of the OTM in printable PDF form which teachers can print on demand.

A great strength of an OTM is that there are, in principle, no space limits to it. A great amount of information can be presented in an OTM. Additionally, cross-referencing would be no problem regardless of the amount of information because the content of an OTM can be linked to each other through hyperlinks. The content of an OTM can be expanded or corrected based on the constant feedback teachers give. Teachers are usually not contacted about what they think about a TM or even if they notice things to be improved, so they do not share their thoughts with the publishers. This may be because they know there is no way to change anything in a printed manual. However, in the case of an OTM, teachers can be encouraged to give feedback which eventually would contribute to the quality of the TM and would help teachers take it more seriously as a source instead of a simple answer key provider.

Not having space issues also gives a chance to organize the content of an OTM in multiple ways based on the topics and based on the mode of information. For instance, instructional videos may be embedded into the topics they belong to as well as they can be presented under a separate “videos” section. This enables teachers to save time in cases when they want to get brief information about a topic by watching a video instead of delving into the contents of a unit. Besides, additional teaching materials may easily be shared in an OTM. For instance, some current web-based TMs provide PowerPoint slides and flashcards for teaching the content (Fromkin, Rodman, & Hyams, 2013).

In an OTM, student materials can be presented right next to the teacher’s materials, as is the case in the manual used in this study, or they could be linked to the relevant pages on the manual. In the cases student and teacher materials are placed next to each other, teachers do not
need to spend effort cross-referencing. Additionally, this saves teachers from carrying a student’s book because they have access to it as long as they have access to the OTM. Having the student and teacher materials next to each other was one of the features teachers liked most about the OTM in a previous study (Sonsaat, 2016).

An OTM can increase interactivity and student engagement in class due to the immediate feedback features integrated into it. For instance, in the online lessons from *Pronunciation for a Purpose* (the pronunciation teaching material used in this study), there is immediate feedback for many exercises in the student materials. Immediate feedback in the student materials can even give a chance to a teacher to practice with the student materials without necessarily looking at the answer key.

Providing a phonetic chart is a must for pronunciation teaching materials. However, a chart that does not enable one to hear how the sound is produced may not be as helpful as expected. In an OTM, teachers can be provided with an interactive phonetic chart, that is, they can click on any sound, hear how it is produced in isolated form and in differing positions in a word. This interactivity feature can be used to provide pronunciation of English sounds by speakers of different L1s.

Presentation of information can be a strength or a limitation for an OTM if the amount of text to be placed on a web page or the way it looks on different screens is not controlled strictly. There are different methods to present the content of online material such as accordion boxes, which can be collapsed or expanded and sliding content boxes. Using one of these methods can be good for some readers and not for some others. Most of the teachers in Sonsaat (2016) liked the accordion boxes since the information is shared in small chunks, and they said they did not
like the content on the introduction page that is presented as a long text on one single page. Apparently, scrolling down through a text makes content seem overwhelming for some teachers.

The potential advantages of an OTM given above are mostly for teachers. However, an OTM can bring many advantages for the materials developers as well. Current technologies allow real-time data tracking on online platforms which means users’ interaction on a website can be recorded and the most frequently visited pages can be told. This type of data tracking enables materials designers to see what parts of their materials are used most often, what parts are not used at all, what kind of struggles users experience with the materials, and how much time they spend on them. In contrast to printed materials, which cannot be updated before a second edition, online material can always be updated for better experience of the users based on the continuous feedback received through real-time data tracking. Additionally, being able to identify the most frequently visited pages or the most frequently used features can also show what kind of support teachers need, what type of information they pay attention to, and for what purposes they use a TM in general. Therefore, technology integration into materials development should not be considered only to make learning better but also teaching and materials design. Real-time data tracking was employed in this study as well to tell about what features teachers of the OTM were used most often and how they interacted with the OTM.

2.4.2 Teacher’s Use of Technology

Teachers’ use of technology may vary depending on teacher-related and context-dependent factors (Afshari et al., 2009; Al-Senaidi, Lim, & Poirot, 2009; Inan & Lowther, 2010; Karabulut-Ilgu, 2013; Zhao & Frank, 2003). Understanding teacher-related factors helps understand teachers’ feelings about technology use while understanding context-related factors helps understand why the use of technology is not only up to teachers’ willingness or reluctance to use it. Teacher-related factors in technology use include teachers’ age, teaching experience,
pedagogical beliefs about the usefulness of technology in teaching, technological confidence, technology use in personal life, and training in technology.

Age seems to be influential on how comfortable teachers feel with technology in their personal life and teaching (Inan & Lowther, 2010, Tour, 2015). Older teachers feel less comfortable with technology and use it mostly for functional purposes whereas younger teachers use it for fun activities as well (Robinson & Mackey, 2006). In an old study, according to the report of National Center for Education Statistics (2000), teachers with less teaching experience used computers more in their teaching compared to the senior teachers, and this can be accounted for by the age effect. However, there are studies in which no significant influence of age has been found on teachers’ use of technology (Al-Senaidi et. al., 2009; Becta, 2004).

Another factor affecting teachers’ use of technology is teaching experience. Inan and Lowther (2010) report that years of teaching experience affect teachers’ integration of technology negatively. Based on Becta (2004), some teachers may not welcome innovation in their teaching practices. Besides, institutions’ falling short of building the required infrastructure and not providing the required support may reinforce teachers’ negative attitudes towards the use of technology for instructional purposes.

Teachers’ pedagogical beliefs about the usefulness of technology are among the factors affecting teachers’ use of technology in teaching (Chen, 2008; Jimoyiannisa & Komisb, 2007). Li (2008) reported that teachers’ pedagogical beliefs are more effective than all the other external factors in their use of technology. In a similar vein, Wozney, Venkatesh, and Abrami (2006) argued that teachers’ beliefs about perceived value of technology is the most influential factor on their adopting technology in their teaching. Inan and Lowther (2010) also showed that teachers’
beliefs about usefulness of technology positively affect their integration of technology into their teaching.

Technological competence and confidence are among the frequently mentioned reasons for teachers’ adopting or rejecting technology in their teaching practices. If teachers do not believe they are competent and confident in technology, there is a high chance that they will be reluctant to use it (Li, 2014). Teachers’ negative self-perceptions about their confidence in technology form a barrier for their integration of it into their teaching (Becta, 2004). In contrast to the findings of these studies, Al-Senaidi et al. (2009) reported that teachers’ lack of confidence was not an influential factor in their use of technology in teaching.

Kessler and Plakans (2008) categorized teachers as highly confident, contextually confident and less confident in their use of audio and video materials for language teaching. The authors could not find a positive relationship between having high confidence in using audio and video technology and integrating them into language teaching. In fact, both less confident and contextually confident teachers integrated these technologies more into their teaching compared to highly confident teachers. An interesting point was that the youngest teacher in their study did not necessarily have high confidence in using technology; therefore, the authors warned about being cautious about the ‘digital natives’ fallacy. This fallacy may be explained by the fact that it is not the only factor influencing people’s use of technology since many factors interact with each other.

Another factor predicting teachers’ use of technology in teaching is their personal use of technology for daily purposes. As argued by Ware (2008), the integration of technology into classroom settings requires teachers’ interest in and enthusiasm for technology. According to Wozney et al. (2006), teachers’ daily computer use is one of the strongest indicators of their
technology use in class. Similarly, Tour (2015) pointed out that the way teachers use technology in their personal lives is reflected into their teaching practices.

Training in technology may also be influential on teachers’ integration of technology into their teaching. Chen (2008) proposed that most of the teachers who are active Internet users are those who took a technology-related degree or course. Karabulut-Ilgu (2013) also proposed that training helps teachers with effective technology use in language teaching; however, lack of training is not a barrier for them since they can autonomously learn how to use technology effectively if they believe in the advantages of technology in teaching.

Teacher-related factors are not sufficient to understan the way teachers use technology since there other external factors affect their decision-making processes. These external factors are related to the context teachers teach in. Context-related factors involve resources, time, educational context, and technical support.

Lack of resources or limited resources is one of the most frequently reported barriers for technology integration whereas availability of them contributes to quick spread of technology use at schools (Becta, 2004; Zhao & Frank, 2003). Although access to resources is better in recent years compared to past, more recent studies show that a lack of resources is still a barrier to integration of technology in many contexts (Kahveci, Sahin, & Genc, 2011).

Time constraints are another frequently cited barrier by teachers for technology integration in language teaching. Teachers often express that they do not have sufficient time to find or create resources and to learn new technologies (Chen, 2008). Chambers and Bax (2006) argued that time constraints are one of the most critical barriers on CALL normalization. Some researchers suggest providing release time to teachers to overcome time constraints (Afshari et al., 2009).
Educational context, which may be an influential factor in adopting technology into teaching, includes anything related to curriculum and assessment, the importance given to technology by school administrations, and involvement of parents and community in teaching practices. Integration of technology into syllabus is one factor contributing to the use of technology by teachers (Chambers & Bax, 2006). Afshari et al. (2009) encouraged institutions to have a strategic plan to integrate technology into school curriculum. Additionally, the support of school administrators is a good motivator for teachers to integrate technology (Karabulut-Ilgu, 2013). It is indicated that teachers may be reluctant to use technology if their efforts are not appreciated by school administrators (Hutchison & Reinking, 2010). Additionally, in some educational contexts, teaching is exam-oriented and textbooks are the main input sources; in such settings technology integration is not shown to be successful (Li, 2014).

Another important factor impacting teachers’ use of technology is the availability of technical support. Teachers who do not prefer using technology usually blame its being unreliable or creating technical problems. In addition, some teachers feel nervous about something breaking down when they use computers (Zhao & Frank, 2003). In all these cases, teachers look for technical support they can rely on. The literature shows that many teachers see the lack of technical support as an obstacle in their adopting technology (Inan & Lowther, 2010).

As shown in the previous sections, there are teacher-related and context-related factors affecting teachers’ preferences when it comes to using technology for instructional purposes. The question for materials developers concern what they can do to get rid of some of the factors preventing teachers from using online materials. In other words, what are the implications of the literature and findings of Sonsaat (2016) for materials developers?
1. **Tutorial and guidance on how to use the material.** Providing teachers with clear video tutorials or written explanations showing how to use an OTM could put teachers at ease. Lack of explanation about how to use the OTM requires teachers to play with it to learn how it should be used, but not all teachers like learning by trial and error methods.

2. **Technical support.** Teachers who are not willing to use an OTM because they do not feel themselves competent or confident in using technology can be motivated to try out the OTM by ensuring that they will be provided technical support whenever they need. Online or phone-call assistance is something publication houses do recently, thus this type of assistance can be used to show teachers how to use a specific material as well.

3. **Printable content:** Providing a printable PDF copy of each TM page can increase the reliability of an OTM for some teachers because they know they can print any page they want and have access to it even in the extreme cases like forgetting to bring a laptop to the classroom or not having the Internet access. Printable content may also make those who like annotating their materials happy.

Some of the factors inhibiting teachers’ use of online materials can be solved with the suggestions made above, but not all barriers can be eliminated. It should also be kept in mind that language teaching materials that can be printed or online do not necessarily make them better than the others just because of their format. It is the design of the materials and how and how much they meet the needs of the teachers which make some materials better than others.

What research on teachers’ use of technology in teaching shows is that it understanding teachers’ use of technology in their daily lives and teaching practices allows us to better understand how teachers may approach the idea of using an OTM for their pronunciation teaching.
2.5 Research Questions

This study evaluates the usefulness of an OTM designed for pronunciation focused student materials. Most materials evaluation processes are predictive in nature (Mukundan & Ahour, 2011), and what is needed is retrospective materials evaluation requiring the exploration of teachers’ in-use and post-use reflections. In-use materials evaluation needs to be based on “conscientious record-keeping and evidence-based reflection” (McGrath, 2002, p. 181). Therefore, this study investigates the usefulness of an OTM by relying on teachers’ in-use and post-use reflections. This study also explores the influence of the OTM on pronunciation teachers’ cognitions, that is, any changes in their knowledge, thoughts and beliefs regarding pronunciation teaching, because TC is a good framework to understand teachers’ use of teaching materials, especially in relation to the use of technology in teaching. This study is guided by the following research questions:

**Research Question 1:** What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching?

**Research Question 2:** What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching materials?

The purpose of the first and second research questions is to explore TCs related to pronunciation teaching and pronunciation teaching materials. The findings will provide the information that help understand what teachers’ perceived knowledge of and confidence in pronunciation teaching are which will be used as a base to compare the influence of the OTM on TCs in research question 4.

**Research Question 3:** How do teachers interact with the OTM?
The findings of research question 3 will show the most frequently used pages of the OTM and the most frequently used parts in the OTM. Additionally, it will inform how teachers use the OTM, that is, their patterns of use. For instance, do teachers look at an exercise first and then compare it to the TM part or do they not look at the TM at all? Do they read the explanations about the rationale, lesson objectives, and explanations about the exercises only once or come back to them after working on exercises?

**Research Question 4:** *What are the influences of the OTM on NESTs’ and NNESTs’ cognitions regarding pronunciation teaching?*

This last question investigates whether there are any changes in teachers’ knowledge of and confidence in pronunciation teaching as a result of using the OTM and whether the use of the OTM has affected their thoughts about pronunciation teaching at all. In short, the findings of this question will show if the OTM has any educative potential for teachers and whether it contributes to teachers’ existing cognitions by adding new knowledge or boosting their confidence in pronunciation teaching.

### 2.6 Chapter Summary

TMs are worth studying because of their potential influence on teaching and what teachers know and think about a topic. Although they are as important as textbooks and can give information about what teachers look for in teaching materials because of their existing cognitions regarding a topic, they are mostly underrepresented. Few evaluation checklists are devoted to TMs as opposed to 48 evaluation checklists for textbooks (Mukundan & Ahour, 2011), which show the ignorance towards TMs and teachers’ use of teaching materials. TMs can be specifically helpful for on-going development of pronunciation teachers, because pronunciation is an area which is challenging to teach for many teachers because of lack of
training, lack of knowledge, lack of experience, and confidence issues stemming from previously given reasons in addition to language background.

TMs have been mostly published in print in the past and their capabilities have been limited; however, with recent technological advancements they are produced in different formats such as e-books or online materials. This is a timely change since teachers mostly go for online sources recently. Additionally, these new formats can make TMs more accessible and visible compared to the past when publishers did not always send a free copy of TMs to teachers.

Both to understand how to better support teachers in their teaching with the help of technology and to understand how teachers use an OTM, TCs related to pronunciation teaching should be explored. TCs both affect how teachers use available teaching materials and how they are affected by those materials.

This chapter reviewed the literature that provides a background for this study. First, it reviewed research focusing on the importance and evaluation of TMs. Second, the scope of TC in general and in pronunciation teaching were presented which showed that no research has focused on the use of TMs by pronunciation teachers. Third, the role of technology in materials development, effectiveness of an OTM, and teachers’ use of technology were discussed since these may affect teachers’ interaction with online materials. In this study, TCs regarding pronunciation teaching, teachers’ interaction with an OTM, and the influence of an OTM on TC are explored to understand how teachers use teaching materials and how online materials can be designed to meet the needs of a wide variety of teachers.
CHAPTER 3: METHODOLOGY

3.1 Research Design

This study investigated the usefulness of an OTM designed for pronunciation focused student materials and the influence of the manual on native and non-native English-speaking pronunciation teachers’ cognitions (NESTs & NNESTs). Teachers’ cognitions involve abstract constructs such as knowledge, thoughts, and beliefs. Measuring these constructs by relying on quantitative methods does not give a sufficient understanding of them. To date, other studies exploring second language teachers’ cognitions have also combined both quantitative and qualitative methods because of the same concern (Baker, 2014).

This study employs a mixed-methods design to answer the research questions. Mixed-methods design helps with the analysis of multi-faceted complex matters and increases the validity and generalizability of research findings (Dörnyei, 2007). This design also allows for a methodological triangulation, that is, comparison of quantitative and qualitative findings mitigating the negative effects of employing a single method and increasing the internal and external validity of the findings (Dörnyei, 2007).

This study uses an explanatory sequential mixed-methods design in which quantitative findings were further explained with the help of qualitative findings. With this design, a researcher may choose to further investigate demographic information, to extend important variables, to explain expected and unexpected significant/nonsignificant findings and outliers (Creswell, 2015). Explanatory sequential design works best for this study because most of the quantitative data in the study requires understanding participants’ personal input.
Figure 2. Research design: Explanatory sequential design
There are four phases of the sequential design in this study (See Figure 2). Phase I and II answer research question 1 “What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching?” and research question 2 “What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching materials?” The quantitative survey data in phase I, demographic, rating, ranking, and Likert-scale questions, will be further explained by the qualitative data in phase II, open-ended responses on the survey, and the semi-structured interviews following the survey.

Research question 3 “How do teachers interact with the OTM?” is answered with the data obtained in phase III and IV. Quantitative data in Phase III are real-time user data involving the screen recordings of individual users, overall mouse-click frequencies on pages of the OTM, and visited pages frequencies of the OTM. These data are further explained by the qualitative data obtained from weekly journal responses participants submitted during their use of the OTM and semi-structured interviews following their use of the OTM in phase IV.

Research question 4 “What are the influences of the OTM on NESTs’ and NNESTs’ cognitions regarding pronunciation teaching?” is answered by comparing phase II and phase IV data. Table 3 shows a summary of the data collection tools and data analysis methods for each research question.

### 3.2 Participants

Participants for this study were recruited using convenience sampling since they were the volunteers who took an online survey, the initial data collection tool, which was sent in a recruitment email. The recruitment e-mail was sent to personal contacts and to listserves on which the targeted population was subscribed to. One of the listserves, including over 200 subscribers, was an invitation-only group and was a pronunciation-focused group. The other
listserve was a primarily U.S.-based group including international teaching assistant professionals. Target participants were those who had taught oral communication skills or pronunciation before, who gave importance to pronunciation teaching, and who could give feedback about pronunciation teaching.

Table 3. Summary of Data Collection Tools and Analysis Methods for Research Questions

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Collection Tools</th>
<th>Data Analysis</th>
<th>Phase</th>
</tr>
</thead>
</table>
| **RQ1**: What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching? | • Rating questions on online survey  
• Ranking question on online survey  
• Likert-scale questions on online survey  
• Open-ended responses on online survey  
• Semi-structured interviews (Interview I)  | • Descriptive statistics  
• Inferential statistics  
• Cronbach’s alpha  
• First and second cycle data coding  
• Themes  | I & II  |
| **RQ2**: What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching materials? | • Real-time user data records  
• Screen recordings of OTM use  
• Semi-structured interviews (Interview II)  | • Descriptive statistics  
• First and second cycle data coding  
• Themes  | III & IV  |
| **RQ3**: How do teachers interact with the OTM?                                | • Semi-structured interviews (Interview I)  
• Semi-structured interviews (Interview II)  | • Comparative analysis of the interviews  | II & IV  |
| **RQ4**: What are the influences of the OTM on NESTs’ and NNESTs’ cognitions regarding pronunciation teaching? | • Matching questions on online survey  
• Ranking question on online survey  
• Likert-scale questions on online survey  
• Open-ended responses on online survey  
• Semi-structured interviews (Interview I)  | • Descriptive statistics  
• Inferential statistics  
• Cronbach’s alpha  
• First and second cycle data coding  
• Themes  | I & II  |

In total, 83 individuals responded to the online survey. However, twenty-nine of those were excluded because they did not complete the survey or they did not respond to many questions in the survey. The final number of participants was 54 and were all individuals who taught oral communication and/or pronunciation skills in EFL and/or ESL settings. There were 34 NESTs and 20 NNESTs in the study. Some of these participants (n=37) were recruited during a previous study (Sonsaat, 2016) and some during this study (n= 17). The reason the participants from Sonsaat (2016) are included in this study is that the online survey was the same one as in
that study. Therefore, the data obtained from all participants through the survey and the interview 1 were used to answer research question 1 and 2 in this study. Research questions 3 and 4 were answered relying on the data obtained from 8 participants (5 NESTs and 3 NNESTs) who were recruited after Sonsaat (2016). These 8 participants went through all five stages of this study including the initial survey, the follow-up interview (Interview I), using the OTM along with the accompanying student materials, weekly journals based on the use of the OTM, and the materials evaluation interview (Interview II). Participants of this study were divided into two groups as NESTs (N=34) and NNESTs (20). Table 4 shows the demographic information of both groups of participants.

Table 4. Characteristics of the Native and Nonnative Teachers

<table>
<thead>
<tr>
<th></th>
<th>NESTs (N= 34)</th>
<th>NNESTs (N= 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>49</td>
<td>37</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Range</td>
<td>27-82</td>
<td>28-67</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>17</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Length of oral communications and/or pronunciation teaching experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 years</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>4-6 years</td>
<td>6%</td>
<td>15%</td>
</tr>
<tr>
<td>7-10 years</td>
<td>9%</td>
<td>15%</td>
</tr>
<tr>
<td>11 or more</td>
<td>65%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Taken a pronunciation class before</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>50%</td>
<td>80%</td>
</tr>
<tr>
<td>No</td>
<td>50%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Settings taught in so far</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFL</td>
<td>6%</td>
<td>60%</td>
</tr>
<tr>
<td>ESL</td>
<td>38%</td>
<td>0%</td>
</tr>
<tr>
<td>Both</td>
<td>56%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Number of languages spoken/studied other than the native language</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>9%</td>
<td>0%</td>
</tr>
<tr>
<td>1</td>
<td>35%</td>
<td>25%</td>
</tr>
<tr>
<td>2</td>
<td>32%</td>
<td>50%</td>
</tr>
<tr>
<td>3 or more</td>
<td>24%</td>
<td>25%</td>
</tr>
<tr>
<td><strong>How much do you like teaching English pronunciation? (1= not at all; 10= extremely much)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>8.89</td>
<td>8.91</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1.25</td>
<td>1.13</td>
</tr>
</tbody>
</table>

TESL= teaching English as a second language; AL= applied linguistics; ELIT= English Literature; OLs= other languages; OFs= other fields; Teaching certificates= DELTA, CELTA, ICET, ACE
As shown in Table 4, NNESTs in this study were about ten years younger than the NESTs on average. NESTs had a longer experience of teaching oral communications or pronunciation skills with 65% of the group having taught these skills for at least eleven years or more, whereas more than 45% of NNESTs teachers taught these skills between one to six years. As for their training, most of the NNESTs (80%) took a pronunciation class during one of their academic degrees, while only 50% of NESTs did so. Thus, NESTs seem more experienced whereas NNESTs appear to be more trained for pronunciation teaching. In relation to the teaching settings, almost all NESTs had teaching experience in an ESL setting, but half of them had teaching experience both in an EFL and ESL setting. Unsurprisingly, all NNESTs had teaching experience in an EFL setting, which probably is their own local context; and some (40%) had both an EFL and an ESL teaching experience. In EFL settings, teachers had more homogeneous groups of students since almost all of them share the same L1. What this tells is that NNESTs may be very familiar with the pronunciation difficulties of one group of students but not with the others. Other than some NESTs (9%), all teachers spoke a language other than their native language, and more than 50% of the teachers in both groups speak two or more languages in addition to their native language. This indicates that most of the teachers have second language learning experience, which might help them understand learners’ difficulties or assist them in their teaching.

NNESTs in this study are from various language backgrounds as shown in Table 5, and 70% of them spent more than a year in an English-speaking country. A better look at NNESTs’ features in Table 5 shows that the reason for spending more than a year in an English-speaking country is pursuing a graduate degree in the field.
A mutual characteristic of both groups of teachers is that they like teaching English pronunciation (see Table 4). Additionally, both groups of teachers were trained in second language learning although not all are trained in pronunciation teaching. A good number of teachers of both groups have both EFL and ESL experience, and most of them have been language learners themselves. Slight differences that are depicted above bring in different strengths to the teachers that will be mentioned in the relevant sections below.

Table 5. Characteristics of Nonnative Teachers (N=20)

<table>
<thead>
<tr>
<th>L1 background</th>
<th>B. Portuguese</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chinese</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Farsi</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>French</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Indonesian</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Korean</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Montenegrin</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Polish</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Turkish</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Ukranian</td>
<td>1</td>
</tr>
<tr>
<td>Lived in an English-speaking country</td>
<td>Yes</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>20%</td>
</tr>
<tr>
<td>Time spent in an English-speaking country</td>
<td>Less than a month</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>1-3 months</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>3-6 months</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>7-12 months</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>More than a year</td>
<td>70%</td>
</tr>
<tr>
<td>Received any of the educational degrees in an English-speaking country</td>
<td>Yes</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>30%</td>
</tr>
<tr>
<td>Degrees received in an English-speaking country</td>
<td>BA</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>MA</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>PhD</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>MA student</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>PhD student</td>
<td>57%</td>
</tr>
</tbody>
</table>

*NOTE:* Numbers in ‘degrees received in an English-speaking country’ do not add up to 100% since participants could choose more than option in this question.
3.3 Materials

3.3.1 Survey and Interviews

The survey contained 43 questions for NESTs and 48 questions for NNESTs. Having different numbers of questions for these two groups was because NNESTs were asked a few more questions about their English language experience. The survey elicited information on various topics: (1) background information, (2) teacher cognitions – entailing self-perceptions of pronunciation knowledge and teaching, pedagogical practices in relation to materials use, and (3) expectations of a teacher’s manual in general and specifically for pronunciation teaching. The answers to the survey questions related to teachers’ expectations are not analyzed in this study.

The section about teachers’ expectations from TMs in general was adopted from Cunningsworth (1995) and more questions were added by the researcher about the TMs accompanying pronunciation books. The survey included multiple-choice questions, checklists, yes/no questions, 5-point Likert scales, rating questions, and open-ended questions. It took approximately 20 minutes to complete and was delivered using the online survey software, Qualtrics (See Appendix A for a copy of the survey). The post-survey interview (Interview I) involved 30 semi-structured questions, and it elicited information on the same topics as in the survey. (See Appendix B for the post-survey interview questions.)

The materials evaluation interview (Interview II) included 20 semi-structured questions eliciting information about teachers’ use of the OTM. It asked what teachers liked or disliked about the manual and how useful they found the OTM (See Appendix C for the materials evaluation interview questions). Teachers were also asked questions about their cognitions regarding pronunciation teaching.
3.3.2 Online Teacher’s Manual

NESTs and NNESTs in this study evaluated an online TM accompanying an unpublished student’s book, *Pronunciation for a Purpose (PFP)*, developed by Levis and Muller Levis (n.d). The online teacher’s manual (OTM) was designed by me based on the printed TM the authors had developed earlier. However, the OTM was much more fully developed and included many more features such as additional instructional videos and phonetic transcription of key words in relevant places. By the time the data for this study were collected, there were seven chapters of the OTM ready for use. Three of these units dealt with segmental features of pronunciation (consonants & vowels; [n], [l], [r]; [b], [p], [f]; and the other four units with suprasegmental features of pronunciation (word stress, final intonation, non-final intonation and sentence focus).

The OTM presented the content of the student’s material and the TM next to each other (Figure 3); thus there was no cross-referencing issue. Additionally, the content of the manual was presented in accordion boxes that can be expanded or collapsed based on what teachers want to see at a particular time (Figure 3).

Using the OTM, teachers do not need to download anything since the audio material is embedded. Most of the words in the OTM are clickable, and thus teachers mostly can click on the words to hear them, or click the play icon to listen to a spoken text for an exercise. There are also instructional videos in the manual (Figure 4), which explain a given pronunciation feature is for the teachers. Additionally, the examples used in the instructional videos are mostly the examples used in the student’s material, so that it gives ideas to teachers about how to use the given examples to explain a concept.
Figure 3. Presentation of student's material on the OTM

Figure 4. An instructional video explaining the concept presented in the student's material
3.3.3 Weekly Journals

Teachers kept weekly journals about their experience with the OTM to better reflect how they interacted with it. Teachers were given eleven questions to prompt their journal entries (Appendix D).

3.3.4 Real-time user data tracking

Teachers’ interaction with the online TM was recorded by Inspectlet (http://www.inspectlet.com/feature/session-recording), a screen-recording and real-time data tracking program. This program enabled me to see what features were used most in the manual and what features were not used, since it provided heatmaps (see Figure 5). Inspectlet was also able to provide analytic data about overall use of the OTM by providing information about how many times the website was visited on a day (see ‘traffic analytics’ in Figure 6).

![Inspectlet heatmaps](image)

**Figure 5.** Inspectlet heatmaps

Most importantly, Inspectlet kept recordings of each user session which I could watch and gain insight about participants’ use of the OTM and their interaction with it (see Figure 7). For instance, the yellow dot in Figure 7 shows the real-time mouse-click and the red dots show
where the user clicked previously.

Figure 6. Inspectlet, traffic analytics (graphic based on the daily visits on the website)

Figure 7. Inspectlet screen recording
The data obtained from the real-time user data were helpful both in understanding teachers’ interaction with the materials and providing a chance to ask additional follow-up questions in the materials evaluation interview.

3.4 Procedures

Members of a few language teaching related listservs were contacted by email in Spring 2017 and asked for their participation. In the email, participants were informed that there were five steps of data collection in this study, including the online survey, a post-survey interview, use of student materials and the OTM, weekly journals, and a final interview on their use of the manual, and that they could participate in as many steps of the study as they wanted.

Interviews were made through Skype or face-to-face depending on where the participants were. Face-to-face interviews were recorded through Audacity digital audio editor, while online interviews were recorded with Audacity digital audio editor. Post-survey interviews took 40 minutes on average.

Having filled out the survey (first step), 24 participants out of 54 (NESTs=14; NNESTs=10) were interviewed about the same topics (second step). Eight participants (NESTs=5; NNESTs=3) agreed to take part in all five steps of this study. These participants were provided with more information on how to access the OTM and its accompanying student materials, the weekly journals they would need to keep, and the final interview about their use of the OTM (Interview II). These teachers were also reminded that student materials were printed materials and they were not under investigation for this study, and they would specifically be asked to focus on the OTM which they were given access to through my website (see http://sonsaat.public.iastate.edu/prosite/index.html).
Teachers who went through all five steps of the study were told that they would evaluate the OTM by using it to teach one segmental unit, one suprasegmental unit and a third unit of their choice from the topics that are available: consonants & vowels; [n], [l], [r]; [b], [p], [f]; word stress; final intonation; and sentence focus. Participants were given four weeks to teach their chosen units in the order they wanted. Teachers were asked to send weekly journals at the end of each week. Once each participant was done with their evaluation, I scheduled a Skype interview for materials evaluation. Each interview took about 35 minutes and was recorded through Audacity audio digital editor.

**Figure 8.** Research procedures

### 3.5 Data Analysis

#### 3.5.1 Survey Data

To analyze the quantitative data, descriptive and inferential statistics were calculated through SPSS Statistical Package for the Social Sciences. All Likert-scale questions in the survey were analyzed by Mann Whitney U Tests to explore if there are any statistically significant differences between NESTs and NNESTs. The reason for the non-parametric Mann Whitney
Tests instead of an independent t-Test or one-way ANOVA was that the number of participants in the non-native English-speaking teachers group was less than 30 which did not meet the assumptions of a normal distribution.

3.5.2 Real-time User Data Tracking

In addition to the data obtained from the survey, this study included quantitative data obtained from the real-time user data tracking program. Every time the OTM was used by a teacher, the tracking program recorded the screen and kept frequency records for the features that were used most frequently by providing click and scroll heatmaps. The screen-recording data obtained from the tracking program provided descriptive information about the most frequently used features of the OTM. The data obtained from weekly journals were triangulated by using the information obtained from the tracking program. The data obtained from this program were analyzed by using descriptive statistics.

3.5.3 Open-ended Questions in the Survey, Semi structured Interviews, Weekly Journals

All research questions included qualitative data in this study. The qualitative data were obtained from the open-ended questions in the survey, post-survey interviews (Interview I), weekly journals and materials evaluation interviews (Interview II). All interviews were transcribed verbatim by a transcriber and read by the researcher to double check correctness. Open-ended questions, weekly journals, and the interviews were segmented and coded by the researcher. Coding in this study was data-driven, that is, the codes did not exist at the beginning but were created based on the recurring themes in the data (Brinkmann, 2013).

To theme the data, a cyclical approach was used while coding; that is, various first cycle data coding methods (i.e., descriptive coding, In Vivo coding, and structural coding) and second cycle data coding methods (i.e. focused coding) were used (Saldaña, 2013). The use of these
different coding methods enabled recoding and revising data to better discover the major themes (see Appendix E and F for code books). A sample coding is presented in Figure 9.

**Figure 9.** Sample coding of qualitative data

First cycle data coding constitutes the initial coding, and any information which seemed important for a research question in general or for a question that was asked during the interviews was coded. Structural coding was used to identify the general topics based on interview questions, for instance, “what makes pronunciation teaching challenging?” This is a method used to tag a large text representing a broad topic (Saldaña, 2013). Descriptive coding was used to describe the topic of a text by using mostly noun phrases; In Vivo coding was used when a participant’s own language was used for coding (Saldaña, 2013).
Following the initial coding, data were coded one more time using second cycle coding methods to create the main codes of the study. With the second cycle coding, certain codes were grouped under the larger themes. Focused coding was used to search for the most recurring topics in the codes to create major themes (Saldaña, 2013). During the second cycle data coding, data were reorganized, codes were split or combined, as in the example given in Figure 9.

Ten percent of the data was coded by a second coder. The second coder was an undergraduate student majoring in linguistics. She coded data after she went through a short training with the codes in the codebook. Agreement between the second coder and the first coder (the researcher) was 75%, which is 93 codes of 123. Once the second coder was done with coding and the coder agreement was calculated, the coders analyzed the codes on which they did not agree and decided which of the codes was more appropriate.

All materials and procedures used in the current dissertation were reviewed and approved by the Iowa State University Institutional Review Board (IRB). The first page of the IRB approval is available in Appendix H.
CHAPTER 4: RESULTS FOR RESEARCH QUESTION 1

This chapter presents the results of the study in four major results sections. Research question 1 addresses TCs regarding pronunciation teaching; research question 2 deals with pronunciation teachers’ cognitions about pronunciation teaching materials; research question 3 deals with pronunciation teachers’ interaction with the OTM; and research question 4 focuses on the influence of the OTM on TCs regarding pronunciation teaching.

4.1 Teacher Cognitions about Pronunciation Teaching

The first research question of this study is What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching? This question specifically investigated what native and non-native English-speaking teachers’ perceptions were about their knowledge of pronunciation, their confidence in teaching pronunciation, and their thoughts about the challenging parts of pronunciation teaching. Teachers’ self-perception about their knowledge of and the confidence in pronunciation teaching are reported through quantitative data. The data regarding the challenging parts of pronunciation teaching were obtained from the open-ended questions in the online survey and the interviews with 14 NESTs and 10 NNESTs.

The results of research question 1 are important for gaining insight into pronunciation teachers’ needs, as these are usually unspoken. Without knowing the needs of teachers, material developers must rely on their own assumptions about what teachers know or do not know while creating a TM to accompany a pronunciation book. Understanding what kind of knowledge pronunciation teachers have or do not have, whether they are confident to teach pronunciation, what kind of challenges they have in pronunciation teaching, and what contributes to the challenges they have in pronunciation teaching are crucial for designing a TM supporting the needs and meeting the expectations of a wide variety of teachers. Answers to research question 1
inform readers about each of these points and should help materials designers, curriculum developers, and those who teach in teacher training programs. Table 6 shows that both NESTs and NNESTs rated themselves highly on their overall pronunciation knowledge although NNESTs’ rating (M=7.84) was slightly lower than that of the NESTs (M=8.25). Both groups of teachers’ overall confidence in pronunciation teaching and their confidence in teaching segmental and suprasegmental features matched their knowledge-based ratings. NESTs rated their overall confidence and confidence in both features of pronunciation almost the same, whereas NNESTs rated themselves slightly lower for their confidence in teaching suprasegmental features of English.

Table 6. Teachers’ Perceived Knowledge of Pronunciation Features

<table>
<thead>
<tr>
<th></th>
<th>Native (N=34)</th>
<th>Nonnative (20)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Overall knowledge of English pronunciation</td>
<td>8.25</td>
<td>1.38</td>
</tr>
<tr>
<td>Knowledge of segmental features</td>
<td>8.24</td>
<td>1.95</td>
</tr>
<tr>
<td>Knowledge of suprasegmental features</td>
<td>8.19</td>
<td>2.10</td>
</tr>
<tr>
<td>Overall confidence in teaching English pronunciation</td>
<td>8.24</td>
<td>1.57</td>
</tr>
<tr>
<td>Confidence in teaching segmental features</td>
<td>8.25</td>
<td>1.36</td>
</tr>
<tr>
<td>Confidence in teaching suprasegmental features</td>
<td>8.22</td>
<td>1.64</td>
</tr>
</tbody>
</table>

(0= Not knowledgeable at all, 10= extremely knowledgeable; 0= Not confident at all, 10= extremely confident)

A closer look at segmental and suprasegmental features individually shows that NESTs’ knowledge of and confidence in teaching suprasegmental features are rated to be higher than those of NNESTs. However, when it comes to teaching segmental features, NNESTs’ ratings of knowledge and confidence were slightly higher than those of NESTs. Yet according to the results of the Mann-Whitney test, the only significant difference between NESTs’ and NNESTs’
knowledge (U=222, p= 0.047) and confidence (U= 200, p= 0.046) was in teaching suprasegmental features.

Qualitative data showed that both groups of teachers referred to their perceived subject-matter and pedagogical content knowledge of pronunciation mostly to explain the challenges they faced in pronunciation teaching in general or when they started to teach pronunciation. In most of the occurrences of reflection on knowledge, teachers focused not on their knowledge but on their lack of knowledge. This is quite an interesting finding since both groups of teachers rated their knowledge in English pronunciation very highly.

One of the NESTs, Chloe, said “So we did have strong phonetics backgrounds and phonology backgrounds and we were interested in second language acquisition and but at the time we really didn’t know what we were doing.” This indicated that she probably needed more pedagogical content knowledge and practical knowledge by the time she started teaching pronunciation. Another NEST, David, who was teaching a stand-alone pronunciation class by himself for the first time at the time of the interview raised clear concerns about his subject-matter content knowledge and pedagogical content knowledge.

Excerpt 1.1: “Well I can already say that for the suprasegmental things that I have been teaching it has required me to sit down and go back to school already, more than anything else. Um for the segmental stuff it is just kind of something that I don’t really have to think about because that’s the stuff that I focused on when I was teaching the tutorial and when I was still a student as well, but I never really focused on suprasegmental stuff, but now that I am, I’m instructing, I’m teaching the course, I am, I feel more obligated to as you said kind of you know, hit the books and try and figure out the details so that I can explain it . . . Sometimes I feel like I am more of a natural mimic, and so I don’t always need to know about things as explicitly and some students might need it in a different way than I would have learned it myself. And so that can be difficult at times. To try and cater to all of the different potential learning styles of the students for those who are really good at just imitating it and it comes naturally and the kinds who need to know about all the nitty-gritty details. . . . I mean I would say that that’s something in general that I am still working on.”
David said he never taught suprasegmentals before and therefore he had to go back to his previous learning material to increase his knowledge about these features, which showed a gap in his subject-matter content knowledge. Additionally, he thought he did not have to know things “explicitly” and he was more into imitating and mimicking before but he felt the urge to increase his pedagogical content knowledge to be able to explain suprasegmental features. David’s reflection on his knowledge is crucial in terms of confirming the fact that being a native speaker of English and having the implicit knowledge of things may not be enough when it comes to teaching. David highlighted the importance of explicit knowledge by saying

*Excerpt 1.2:* “like if I’m trying to imitate an Irish accent for example, I might think about the segmental differences, and the vowel differences. For example, but rhythm I don’t really think about it. It would just kind of come naturally. It is more of like an intuitive thing and that’s why because *I don’t have as much explicit knowledge.* I would say it’s harder for me to teach.”

It seems clear that teachers’ perceptions about subject-matter content knowledge, and pedagogical content knowledge about pronunciation features, affects both their decisions in terms of teaching or avoiding a pronunciation feature and how they teach it. A NNEST teacher, Ivy, said:

*Excerpt 1.3 (Ivy, NNEST):* “Not entirely, I mean. Intonation perhaps, but um I don’t feel *I don’t feel that I have got enough theoretical knowledge* to explain that at level. But at the same time, I don’t think that my students need to know theory behind it. They need to know, able to use English um I have done some teacher training before but um more basic things…”

Another NNEST, Mira, similarly stated that there was no point in teaching rules to students for intonation teaching and she would simply have listening tasks to teach intonation based on imitation techniques. She said:

*Excerpt 1.4 (Mira, NNEST):* “I mean native speakers and then I would just follow I would just you know a I would just mark where those native speaker rise or fall
and why they stress this part and why sometimes they are doing several sounds together. **That’s how I would teach them how to imitate.**”

One of the NESTs, Bailey (Excerpt 1.5), said she mostly taught segmental features when she first started teaching and the reason for that was she had her training in speech pathology and she did not have enough knowledge to teach suprasegmentals. Another NEST, Lilly, also focused mainly on teaching segmental features of pronunciation when she was a less experienced teacher. Her explanation (Excerpt 1.6) regarding the reason for focusing on segmental features as to segmental features’ potentially being easiest thing to deal with indicated that there was a chance she did not have the full pedagogical content knowledge and practical knowledge to deal with other features of pronunciation.

**Excerpt 1.5 (Bailey, NEST):** “and um I think on the segmental side I was stronger I knew more about it at that point. That’s why I did that. Then as I developed more in this field um I realized the importance that you know they [segmentals] didn’t just stand on their own. And that there was a whole lot more going on.”

**Excerpt 1.6 (Lilly, NEST):** “so that I might be able to better predict what issues students would have. But back when I started it was very much consonant and vowel focused. Right? Hmm, that was back in 1999. Um so yeah I don’t know if that was because of the time or if that was because that is the easiest thing to deal with but back when I started I was working primarily with Japanese.”

A lot of NESTs explained the breadth and diversity of their knowledge, or not having sufficient knowledge in one of the pronunciation domains by appealing to factors such as teacher training, teaching observation of a mentor or a colleague, their personal efforts in learning more pedagogical knowledge, and practical knowledge they gained through teaching experience. Seven of the 14 NESTs who were interviewed rated their knowledge of English pronunciation above 8.5. The average age of these teachers is 45 (range=30-64) and most had taught
pronunciation for more than eleven years. Table 7 shows commonalities for these teachers and it shows that all teachers had pronunciation training.

Table 7. Qualifications of NESTs with Knowledge Ratings Higher than 8.5

<table>
<thead>
<tr>
<th></th>
<th>Amelia</th>
<th>William</th>
<th>Lily</th>
<th>Susan</th>
<th>Sheryl</th>
<th>Casey</th>
<th>Connie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Took a pronunciation course</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Teaching experience during pre-service education</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Had a mentor while teaching pronunciation</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Teaching observation</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Professional development activities (e.g. conferences and workshops)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Teaching experience</td>
<td>1-3</td>
<td>11+</td>
<td>11+</td>
<td>11+</td>
<td>1-3</td>
<td>11+</td>
<td>11+</td>
</tr>
</tbody>
</table>

Additionally, most attended pronunciation-related conferences and workshops, had teaching experience during pre-service education, had a mentor guiding them in their teaching when they were a less experienced teacher, and had a chance to observe their mentor or colleagues while they were teaching (Excerpt 1.7 & 1.8).

Excerpt 1.7 (Amelia, NEST): “And I excelled at it. Like I was really good at it. And then I applied to our program and I was offered the assistantship to teach the class with Wayne Dickerson and the way he does his kind of TA training is the very first semester, which was my first semester ever officially teaching ESL for like a semester long class, I would shadow him. So I watched him teach every day and then would teach the next semester, so yeah while I felt like I was really comfortable and confident with the materials.”

Excerpt 1.8 (Connie, NEST): “So basically, most of the training um, that I’ve gotten has been on the job. So, working in the ITA program, um especially in the ITA program because I started in the eighties when it first began at the University of Minnesota here. And my mentor was Jan Smith, and so I learned a lot from her, and then um just from working with students, and then after that um writing and attending TESOL conferences, giving presentations, so most of it has been on the job training I would say.”
Only two NESTs in this group, William and Susan, did not have all those different sources of learning; however, both teachers had more than 20 years of teaching experience. William had been involved with conferences and workshops for a very long time and was the chair of a special interest group for pronunciation teaching, and Susan taught international teaching assistants since the time she started teaching but she did not attend any conferences or workshops dedicated to pronunciation teaching. From these 7 teachers who rated their knowledge very highly, only Susan showed indications of uncertainty with some pronunciation features (Excerpt 1.9). For example, although she had some ideas as to what prominence includes, she admittedly was not sure about her subject-matter content knowledge and her strategy to deal with this topic seemed to be avoiding to teach it by putting into a “higher-level” skill that she did not have to teach unless it came up in class or she had time for it.

Excerpt 1.9 (Susan, NEST): “well that’s you know, honestly, that’s maybe part of the issue that you know maybe I am not entirely sure what prominence is, or um I guess when I think of prominence, I think of um emphasizing. You know, emphasizing, emphasis on particular words or phrases or you know, for maybe in a way that, that influences where the meaning is carried and if I’m thinking along the right track, I probably don’t spend much on time on that because it seems to be like a higher level. Uh like higher level, that sort of, requires sort of a higher level of uh cognitive um analysis than what I tend to focus on or what I have time to focus on … but if doesn’t come up, if it’s something that’s you know not a foundational skill like word stress or linking or vowels or whatever. If it doesn’t come up I tend to let it go just because we are so strapped for time.”

When it comes to the knowledge ratings of the 10 NNESTs who were interviewed, only one rated her knowledge of overall pronunciation and knowledge of segmental and suprasegmental features over 8.5. Therefore, Table 8 presents the top 5 teachers who rated their knowledge higher than the other 5 teachers. The average age of these five teachers is 30.4 with a range of 28-32. Pronunciation teaching experience for them was between 1-3 years, but two of
the teachers (Isabelle and Vance) taught English pronunciation only once by the time they were interviewed.

**Table 8. Qualifications of NNESTs**

<table>
<thead>
<tr>
<th></th>
<th>Hailey</th>
<th>Evie</th>
<th>Isabelle</th>
<th>Vance</th>
<th>Mira</th>
</tr>
</thead>
<tbody>
<tr>
<td>Took a pronunciation course</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Teaching experience during pre-service education</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>☒</td>
</tr>
<tr>
<td>Had a mentor while teaching pronunciation</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✔️</td>
</tr>
<tr>
<td>Teaching observation</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✔️</td>
</tr>
<tr>
<td>Professional development activities (e.g. conferences and workshops)</td>
<td>✗</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Teaching experience</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
</tr>
</tbody>
</table>

The only similarities these teachers had except for the length of their pronunciation teaching experience was having taken a pronunciation course and tutored while they were taking the pronunciation course. Two of these teachers (Evie and Isabelle) were working on their doctoral degrees with specialization in pronunciation and that was how and why they started teaching pronunciation. These two teachers attended conferences and workshops as well showing personal effort to improve their expertise in pronunciation teaching. From these teachers, Isabelle said tutoring experience helped a lot with her teaching (Excerpt 1.10). The only teacher who reported having observed her mentor was Mira. She talked about how observing her mentor helped her learn how to teach pronunciation (Excerpt 1.11). Her narration about her observing experience showed that observing someone to teach may contribute to one’s pedagogical content knowledge in his/her area.
**Excerpt 1.10 (Isabelle, NNEST):** “Uh, I think that helped a lot especially because we practiced teaching English in that class. Teaching pronunciation in that class um using a lot of the materials that we use in that class.”

**Excerpt 1.11 (Mira, NNEST):** “But I get a chance to observe how to teach it. So I got a chance to observe that course. I didn’t get a chance to teach here. … Just uh in that course when I am observing that course even thought I wouldn’t really participate. … I am just observing there but sometimes I do learn from that class about how I can pronounce more correctly and how I should teach students pronunciation…”

**Table 9. Teachers’ Confidence in Pronunciation Teaching**

<table>
<thead>
<tr>
<th></th>
<th>Native (N=34)</th>
<th>Nonnative (20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall confidence in teaching English pronunciation</td>
<td>8.24</td>
<td>1.57</td>
</tr>
<tr>
<td>Confidence in teaching segmental features</td>
<td>8.25</td>
<td>1.36</td>
</tr>
<tr>
<td>Confidence in teaching suprasegmental features</td>
<td>8.22</td>
<td>1.64</td>
</tr>
<tr>
<td>Mean (0= Not confident at all, 10= extremely confident)</td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
</tbody>
</table>

Table 9 indicates that NNESTs rated themselves lower for their confidence in teaching suprasegmental features of English; however, post-survey interview results showed that both groups of teachers raised many issues related to confidence. Teachers explained their having or lacking confidence based on their educational background, language background, subject-matter and pedagogical content knowledge, and teaching experience. A NNEST, Vance, explained his lower confidence in suprasegmentals relying on his knowledge about them (Excerpt 1.12).

Another NNEST, Beste, said her confidence was lower with suprasegmentals because she did not have experience in teaching them (Excerpt 1.13). At the institution she worked at, two different pronunciation courses were offered in separate semesters and one of these courses focused on segmentals whereas the other one focused on suprasegmentals, and she was always the one teaching the segmentals.
Excerpt 1.12 (Vance, NNEST): “Um, I think it’s based on my own knowledge. I think I have pretty good control over the segments of English, um maybe a vowel is going to trip me here and there, especially the bid bad, you know like in continuous fluent speech it’s a little um tricky sometimes so. *I think just based on my own knowledge. If you’re gonna teach something you have to know it yourself.*”

Excerpt 1.13 (Beste, NNEST): “And I think usually the other instructor taught suprasegmentals in the first semester I guess, as far as I remember, so I do not teach suprasegmentals as much actually. And I don’t I don’t feel comfortable enough I don’t feel confident enough in suprasegmentals I guess because *I do not have enough practice*. It’s easier to teach consonants of course.”

Some teachers, especially a few NESTs (Cat and David) said they had confidence in teaching pronunciation because of the training they had. And some explained their confidence in one of the pronunciation features was higher than the other because that was the primarily focused feature in their phonetics and phonology class during their teacher training. One of the NESTs, Connie, who was highly experienced in pronunciation teaching, had a very different perspective about her confidence in pronunciation teaching because she suggested that her confidence was negatively affected the more she learned new things in pronunciation teaching. For instance, previously she believed in the distinction of stressed-time and syllable-timed rhythm but then she discovered that there was not a clear distinction like that (Excerpt 1.14). For a teacher like her, who was very aware of ongoing research, confidence in pronunciation teaching was clearly shaken at times because of various claims and approaches in teaching pronunciation.

Excerpt 1.14 (Connie, NEST): “one of the things that I would have to say is that even though I’m confident to a certain degree, um *the more I learn and the more I study, in a way, I don’t know if this makes sense to you, but in a way it destroys my confidence* because what I thought I knew then all of a sudden it’s like oh, okay, what we though we knew, is that really true? So for instance at one point I thought syllable time, stress timed rhythm, you know. Those are the facts and that’s it. But now I see well there is a continuum, there is debate.”
As with lack of knowledge, teachers stated or implied that they tended to avoid teaching or preferred spending a little time on teaching the pronunciation features they found challenging since they did not feel confident about teaching them or they thought did not have sufficient knowledge about them. Teachers who were interviewed following the survey presented different reasons for finding pronunciation teaching challenging, as shown in Table 10. Lack of subject-matter and pedagogical content knowledge were among the frequently given reasons as to why pronunciation teaching was challenging for both groups of teachers, and other reasons included lacking teaching experience, training, and appropriate materials along with language background, and students from different L1 or at different proficiency levels.

Table 10. Reasons Pronunciation Teaching is Challenging

<table>
<thead>
<tr>
<th></th>
<th>Native (N=14)</th>
<th>Nonnative (N=11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of subject-matter content knowledge/pedagogical content knowledge</td>
<td>38%</td>
<td>34%</td>
</tr>
<tr>
<td>Lack of training</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>Lack of appropriate materials</td>
<td>9%</td>
<td>0%</td>
</tr>
<tr>
<td>Language background</td>
<td>3%</td>
<td>17%</td>
</tr>
<tr>
<td>Students from different L1s</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Students at different proficiency levels</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Because some pronunciation features are challenging</td>
<td>29%</td>
<td>29%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Lack of subject-matter and pedagogical content knowledge included teachers’ concerns about what each pronunciation feature entails, how to teach, how to develop activities and provide feedback, simplifying content, and understanding students’ difficulties. Some teachers explicitly said they were not sure about the definition of some pronunciation features (Isabelle and Susan), that it was hard for them to break it into teachable parts (Isabelle), some teachers had difficulties with pronunciation terms (Noelle), some did not know how to identify and explain
students’ pronunciation problems (Olivia) and how to teach other than showing how a sound is produced by showing the mouth shape and imitation techniques (David), and some were confused with the number of rules they thought there were to teach for a particular pronunciation feature and how to simplify the topic (Sheryl, Jayme, David).

In Excerpt 1.15, Olivia shows a lack subject-matter content knowledge by acknowledging she could not tell what was wrong with students’ speech problems. This may indicate insufficient knowledge in phonetics and phonology of English. A teacher who does not know how sounds of a target language are similar to or different from the native language of the students and who is not knowledgeable about the place and manner of articulation of sounds may not be able to diagnose and explain the problems he/she notices. Noticing a mispronunciation is not enough to fully identify what it is and may lead a teacher to give up teaching a particular pronunciation feature as it was the case with Olivia (“I just give up”).

*Excerpt 1.15 (Olivia, NNEST): “I hear it's wrong, I can't say what's exactly wrong - what's exactly wrong with the positioning of their speech apparatus. Sometimes I see that a student has a problem, but I cannot in my mouth I cannot put my tongue and do the position the organs in such a way that I could understand where he’s making the mistake. That’s difficult, I know for me, so I just give up. I cannot define do phonics. I kind of try when I after class I can ask a student to stay later and you know, try to repeat after me. But when I see that I am helpless.”*

In the next three examples, two NNESTs and a NEST expressed that they had difficulties in the ‘how to teach’ part of pronunciation teaching, that is, pedagogical content knowledge. Pedagogical content knowledge means a teacher can make something understandable by providing clear explanations and examples (Shulman, 1986). In Excerpts 1.16 and 1.17, both teachers noted that they showed the mouth shape to teach how to produce a sound but they were not clear about other ways of teaching the sounds. That is, if the students did not get their explanation based on
the mouth shape, that created enough challenge for them since they did not have other methods to help with.

*Excerpt 1.16 (Isabelle, NNEST):* It is difficult when students cannot get the differences between sounds (esp. vowels). sometimes it gets difficult because I have trouble making myself understood to the students in terms of what a sound should look like. And it is challenging, at the same time uh interesting because I kind of try to explain uh how the mouth should be.

*Excerpt 1.17 (Cat, NEST):* “Sometimes I don’t know what to do after showing a student a model of the position of the tongue and lips and modeling the sound and contrasting the sound.”

The challenge of another NEST, David (Excerpt 1.19), was also related to not having the pedagogical content knowledge since he counted rhythm as a challenging feature for himself to teach because he did not know how to explain it. Based on what David said, his method of teaching such features was just to do listen and repeat activities since he simply asked students to listen to what he said and try to imitate him.

*Excerpt 1.18 (David, NEST):* “For example, but rhythm I don’t really think about it. It would just kind of come naturally. It is more of like an intuitive thing and that’s why to teach as well because I can’t explain it as well. I can just say like this is how it is. Do it.”

*Excerpt 1.19 (Mira, NNEST):* “So the challenging will be I have the experience I just don’t know how to teach, how I can manage all this you know not just one syllable one sound, but just the sound across where the phrases and sentences. I just don’t know how to teach it.”

Another teacher, Mira (NNEST) had difficulties with teaching suprasegmental features of English. She said her training and teaching experience so far included teaching segmentals, and she did not have enough experience in teaching above the sound and word level. In fact, teachers like Mira were common in this study in terms of finding suprasegmentals challenging to teach.
The second biggest reason that had teachers found pronunciation challenging was because of the perceived difficulty of certain pronunciation features. It was shown that the challenge of pronunciation teaching was attributed to suprasegmental features many times, especially to intonation. It was followed by other suprasegmental features: thought groups, rhythm and prominence.

Intonation was the most challenging feature for many teachers in this study. Most of the teachers who described why intonation was difficult used the words tricky, messy, complicated, intrinsic, context-dependent and the reason for its being so was explained by its having a lot variations, options, and rules. Teachers were confused about the number of rules or options provided for intonation teaching by different materials including textbooks (Sheryl) or by ongoing debates presented in research (Emma). In addition to these reasons, some NNESTs thought it was challenging because intonation was something which would come naturally for a native speaker and would be very difficult to learn for a non-native speaker. The first excerpt (1.20) below was taken from a teacher who rated her knowledge very high in English pronunciation, who had training in pronunciation which included tutoring experience, and who had a mentor while she was teaching pronunciation in her MA program. Despite her strong educational background in pronunciation teaching and confidence in teaching English pronunciation, she still struggled with intonation, especially with simplifying the content of her textbook. Her saying “I can hear it reasonably well but I find the explanations of it in textbooks um kind of tricky to get through with my student” showed her dependence in her teaching material with this topic and maybe not having her own better way of teaching it or not having attempted to supplement the class material with other teaching materials. In Excerpt 1.21, Emma talked about ‘conflicting research’ about pronunciation teaching. Emma was a teacher who
attended a lot of conferences and read a lot of pronunciation related research. However, she was still confused as to what research trend or implications to follow for intonation teaching.

*Excerpt 1.20 (Sheryl, NEST):* The only thing that I struggle with a little bit in teaching pronunciation is intonation. It’s not my friend. Um, I can hear it reasonably um well. *But I find the explanations of it in textbooks um kind of tricky to get through with my students.* … A lot of textbooks try to make it like this, *there are like twenty different options I feel like textbooks are presenting.* And I have trouble sifting through that myself…”

*Excerpt 1.21 (Emma, NEST):* “so much conflicting research about what to teach with regards to intonation.”

The next two excerpts are from two experienced pronunciation teachers who had been teaching it for more than twenty years. Both had strong educational backgrounds and one of them (Casey, Excerpt 1.22) was a teacher trainer teaching how to teach pronunciation. Casey recognized the context-dependency of intonation and said intonation got sometimes “fuzzy” which made it hard to teach. William (Excerpt 1.23), a British speaker, used a lot of different teaching materials and he noted that he was very aware of all materials out there for pronunciation teaching. However, his words showed that he was not satisfied with intonation teaching guidelines he had seen and so he found it a challenging topic to teach.

*Excerpt 1.22 (Casey, NEST):* “Intonation can get a little messier as far as you know what is acceptable because you know there is so much context to intonation. So I don’t want to say it is always hard to teach or anything like that, but I just think um what I notice with my interns that they struggle. They don’t feel as comfortable with it. Because they feel like it is a little bit fuzzier sometimes to explain things, it’s harder.”

*Excerpt 1.23 (William, NEST):* “Intonation is a tricky area as there is so much variation in tone choice. … Intonation is quite difficult to teach um because it is such a problematic area really. I mean I’m not sure really anyone’s got a handle on how to teach it because the idea is this pattern is associated with this you know emotion or speech function is just wrong. You look at questions, you learn wrong rules like you know uh yes no questions have rising intonation, wh-questions have
falling intonation in British English, that’s just not true. So, intonation is very hard to teach yeah.”

There were also NNESTs who found intonation teaching challenging for various reasons and that was the first thing they named when asked about the difficulties of pronunciation teaching. One NNEST, Isabelle (Excerpt 1.24), who took a pronunciation course in her PhD program said she was not only confused about what intonation included and also how to break it into its parts to teach it. Isabelle said intonation was like an umbrella term for her. Although she was aware of the rising and falling intonation difference, she seemed not to be quite sure about their functions or how to teach them. In excerpt 1.25, Vance revealed his lack of confidence in intonation teaching and its being a challenging topic because of his lack of competence in it. It was also obvious that this led Vance to rely more on the textbook, and as he said if he did not have the answer of an intonation-related topic in the textbook, he tended to make up an answer whose accuracy was doubtful.

Excerpt 1.24 (Isabelle, NNEST): “I think, what I just said uh it’s hard to, maybe it’s hard for me to break intonation down into it’s um, parts. So I tend to refer to suprasegmental features, many of them as intonation. And then I um talk about prominence separately. I talk about stress separately. Intonation, I don’t know what to, well I don’t know. I feel like intonation is an umbrella term, that includes all of these. But at the same time we talked about rising and falling, um that is called intonation as well.”

Excerpt 1.25 (Vance, NNEST): “every now and then my intonation is a bit off. So if I cannot produce myself that makes it harder to teach to the students. Or I might have to be limited to those examples on the text book that I practice again and again but then the student might come up with a question outside of the book. And I’m like uh, I don’t know or I might be tempted to make up an answer which is not 100 percent accurate.”

Vance was not the only teacher who found intonation challenging because of his language competency. Emma is a Scottish speaker who identified herself as a non-RP speaker
and she already had difficulties with adjusting her teaching to other English varieties since teaching materials mostly used Received Pronunciation or General American English. Emma noted the challenges of trying to teach a certain variety of English although she was not a member of that variety (Excerpt 1.26). However, this was not the only difficulty about teaching intonation, Emma stated that there was a lack of materials for the variety and the level of students that she was teaching. She raised her concerns about the materials more than once including the following excerpt; she said she had to create her own materials, a difficult task.

Excerpt 1.26 (Emma, NEST): “… even in Scotland you know I speak Scotland Standard English, I don’t speak a dialect I certainly don’t speak a dialect in the classroom and even when talking with my supervisor for example throughout my master’s and she’s saying well why are you not using the Glasgow intonation? Um Glasgow and west coast of Scotland have the same rising inflection as the Belfast accent but I don’t use that because I’m not from Glasgow and it’s so complicated to kind of to use a local model but then you’re not the local model yourself um so it’s really complicated trying to work out what’s the best one to teach and to then create materials for it takes a long time. And something like Scottish Standard English there is not huge amounts of work published on this so it’s been really challenging to get to grips with.”

Although most of the teachers in this study reported having taken a course to teach pronunciation (NESTs= 61%; NNESTs=80%), there were still some teachers who accounted for the focus on segmental pronunciation features during their training as the reason for their having difficulties in teaching suprasegmental features. Two of the NESTs were very experienced teachers, and they said suprasegmentals were harder for them when they first started teaching, so they mostly covered segmentals in their teaching practices as novice teachers. They both said the reason they did so was their training which was mostly on segmentals (Excerpt 1.27 & Excerpt 1.28). Two other NESTs who were substantially less experienced that the previously-mentioned two teachers reported lower confidence in teaching suprasegmentals and for the same reasons as the two experienced teachers (Excerpt 1.29 & Excerpt 1.30).
Excerpt 1.27 (Bailey, NEST): “I came from a speech pathology background, I think on the segmental side I was stronger I knew more about it.”

Excerpt 1.28 (Bailey, Connie): “…Yeah, actually um yeah that uh course was in, was a course in phonetics and what we did is we learned the IPA and um the instructor taught us how to identify different sounds and then I remember we had short quizzes where she would say a sound and we would have to transcribe it. Nothing about suprasegmentals.”

Excerpt 1.29 (Cat, NEST): it was more of the former. Um, learning the IPA and everything that is involved with that and we kind of touched on how to teach it, but not as much. A lot of that, my knowledge of that just comes from figuring it out in the classroom.

Sinem: But did you also cover suprasegmentals features too? Like intonation, prominence,
Cat: I think that we did. I don’t, I mostly remember more of the segmentals.

Excerpt 1.30 (David, NEST): “when I took the course I would say, I would say that it was definitely more segmental aspects were focused on.”

4.2 Summary of the Findings

Results for research question 1, What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching? indicated that both groups of teachers had high levels of perceived knowledge of and confidence in pronunciation teaching. However, NESTs’ and NNESTs’ perceived knowledge and confidence in pronunciation teaching were significantly different from each other for suprasegmental features in which NNESTs rated themselves lower than the NESTs. However, findings obtained from post-survey interviews showed that both groups of teachers mostly struggled with suprasegmental features of pronunciation and did not feel as confident in teaching these features as they did in segmental features. Especially, intonation was the featured named by most teachers as a reason making pronunciation instruction difficult by itself.
Interview findings obtained from 14 NESTs and 10 NNESTs showed some
commonalities between teachers who rated their perceived knowledge of pronunciation and
confidence in pronunciation teaching higher than the others. These commonalities for NESTs
included having received pronunciation training, participating conferences and workshops
related to pronunciation teaching, having tutored pronunciation during pre-service education,
having observed teaching of a senior, and having had a mentor while practicing pronunciation
teaching during pre-service education. For NNESTs, these commonalities included having
received pronunciation training and having tutored pronunciation during pre-service education.

Even teachers who rated themselves highly for their knowledge of and confidence in
pronunciation teaching and who had pronunciation training and long years of teaching
experience stated that pronunciation was challenging for them at times. These teachers mostly
referred to certain pronunciation features (i.e., intonation, prominence) as the ones creating
difficulties for them. Some teachers said they avoided teaching these features unless they came
up in their classroom.

Results showed that teachers mostly suggested lack of subject-matter content knowledge,
lack of pedagogical content knowledge, lack of teaching experience, and lack of pronunciation
training as reasons that make pronunciation teaching challenging for them. It was a common
pattern for both NESTs and NNESTs to say that they had an idea about what a given
pronunciation feature was or they could tell something was wrong in pronunciation of a student,
but they could not explain what the problem was or how it could be fixed. As with any language
skill, pronunciation teachers need to be able to identify a problem, tell what causes the problem,
and suggest ways of fixing the problem. A pronunciation teacher may not achieve these steps if
he/she does not have the required subject-matter content and pedagogical content knowledge.
What the results of research question 1 tell us is that any teacher may need support in pronunciation teaching regardless of their language and educational backgrounds or years of pronunciation teaching experience. For instance, one of the teachers in this study (Susan) has been teaching English pronunciation for more than 20 years and still had difficulties defining what prominence was, so she did not usually teach this feature unless she had to address it. According to Derwing (2008, 2013), people who teach pronunciation should be knowledgeable about second language acquisition and have been trained in pronunciation, speaking, and listening. However, as the results of research question 1 and research (Foote, Holtby, & Derwing, 2011) show, it may not always be the case. Based on the results obtained in this chapter, a TM designed for pronunciation teaching should include explanations which may increase or refresh teachers’ knowledge of pronunciation features. These explanations should be clear considering that not all teachers have the same educational background or interest in pronunciation teaching. One of the teachers in this study said she did not cover place of articulation and manner of articulation in her pronunciation course, because she “hated” them in her training. She justified her not covering these features by saying that they were already covered in introductory linguistics courses. Therefore, any authors preparing a TM for a pronunciation book may consider using teacher-friendly terms in their explanation sections or a glossary. It should be remembered that not all teachers are linguists or have a strong interest in pronunciation.
CHAPTER 5: RESULTS FOR RESEARCH QUESTION 2

The second research question is “What are native and non-native English-speaking teachers’ cognitions about pronunciation teaching materials?” The purpose of this question was to explore what books and other teaching sources pronunciation teachers use, whether they use a particular textbook while teaching and if so how they choose it, what they like and dislike about the books they have used, and what the influences of the books on their thinking or teaching practices. This question was answered by the descriptive data and some open-ended questions obtained from the online survey as well as the interviews.

The answers obtained from this research question are helpful in terms of understanding teachers’ decision-making patterns and processes for pronunciation teaching. A teacher’s willingness or obligation to choose his/her own teaching materials makes him/her learn about what is available in the market and compare different materials while going through a selection process. These may help teachers think what is important in pronunciation teaching so what is important for them to teach. On the contrary, a teacher’s lack of choice of his/her own teaching material or the use of the same book for many years suggest us that he/she is only familiar with the exercises or teaching methods used in one single book. Whether teachers choose their teaching material themselves or they are assigned to teach with a book chosen by a coordinator or the institution, having a textbook may make some teachers feel comfortable and secure while it may make other teachers feel restrained. And the way teachers feel about this process may reveal a few things about their knowledge and beliefs regarding pronunciation teaching or teaching materials.

Understanding what other sources teachers use (e.g., online dictionaries and mobile applications) in addition to what they like and dislike in teaching materials may reveal what
would be beneficial for teachers in a TM. Besides, knowing what kinds of sources teachers use other than books may reveal what kind of purposes teachers have in using them and what functions of these sources attract teachers. Lastly, seeing the influence of teaching materials on teachers’ thinking or teaching practices may offer valuable input for the design of a TM.

5.1 Textbooks and Other Sources Used by Teachers

Table 11 shows the rate of teachers’ textbook use and the person in charge of choosing the books. It indicates that most of the teachers in both groups used a textbook while teaching pronunciation. It also shows that not all teachers chose the books they used to teach. For NNESTs, only half of the teachers chose the textbooks they wanted to use. As noted, 39% of NESTs, and 46% of NNESTs asserted that they were assigned to teach with a book assigned by either a course coordinator or the institution they worked at. Of those teachers who used a textbook to teach pronunciation, most chose their textbook based on their personal research and teaching experience with the same book. Although it is not known what kind of textbook evaluation criteria teachers had for the books that were available to them, they seemed to go through a decision-making process. Recommendations of other instructors seem to influence teachers’ textbook choices.
Table 11. Textbook Use and Choice of Pronunciation Teachers

<table>
<thead>
<tr>
<th>Used a stand-alone pronunciation book</th>
<th>NEST (N=34)</th>
<th>NNEST (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>68%</td>
<td>65%</td>
</tr>
<tr>
<td>No</td>
<td>32%</td>
<td>35%</td>
</tr>
<tr>
<td>The book was chosen by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Me</td>
<td>61%</td>
<td>54%</td>
</tr>
<tr>
<td>Others</td>
<td>39%</td>
<td>46%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How did you decide to use that particular book</th>
<th>NEST (N=34)</th>
<th>NNEST (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal research</td>
<td>13%</td>
<td>29%</td>
</tr>
<tr>
<td>Teaching experience with the same book</td>
<td>27%</td>
<td>0%</td>
</tr>
<tr>
<td>Personal research and teaching experience</td>
<td>33%</td>
<td>57%</td>
</tr>
<tr>
<td>An instructor's recommendation</td>
<td>13%</td>
<td>14%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

One of the NESTs in the study stated that she wrote her own pronunciation teaching book and therefore she used that one repeatedly while also improving its quality. Other teachers said they had the freedom to choose the book they wanted to use but they did not do personal research, or they talked to their colleagues to find an appropriate book. Instead these teachers preferred using a book that was used while they were a student in an undergraduate and/or graduate program. The NNEST in Excerpt 2.1 taught English for more than 20 years and oral communication skills for 7 years. Although it was a long time ago when she was a student, she still preferred to use the book she used as a student. For the other teacher in Excerpt 2.2, it was not only her learning experience but also her tutoring experience with the book she had as a student.

Excerpt 2.1 (Noelle, NNEST): “Ship and Sheep is for me almost a hundred years old that was what we used as a student but I was happy to see that there was a new version of it.”
**Excerpt 2.2 (Sheryl, NEST):** “One of my favorite textbooks is um I don’t know if I ever would have heard of it if I hadn’t been forced to teach with it during my master’s program, but uh *Speech Craft*, by Dickerson.”

Since books constitute the core teaching materials for most teachers, the teachers in this study were asked what they liked and disliked about the pronunciation books they have used so far. As shown in Table 12, the most recurring theme in NESTs’ data is ‘presentation of pronunciation’ – what and how to teach issues – whereas ‘exercises’ were the most recurring theme for NNESTs. What NESTs liked most about the presentation of pronunciation had to do with the books’ providing detailed, accurate, and clear explanations accompanied by good examples. Providing a structure for the course and lesson plans were also among the reasons teachers mentioned. A NEST emphasized the importance of lesson plans for less experienced teachers (Excerpt 2.3). What NNESTs liked most in the books was basically to have abundant, meaningful, and varied types of exercises.

**Table 12. Things Teachers Like and Dislike about the Pronunciation Books They Used.**

<table>
<thead>
<tr>
<th>Likes</th>
<th>Native (N=14)</th>
<th>Nonnative (N=11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation of pronunciation</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Exercises</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Assessment</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Comprehensiveness</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Level of difficulty</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dislikes</th>
<th>Native (N=14)</th>
<th>Nonnative (N=11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation of pronunciation</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Exercises</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Content</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Multimodality</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>IPA</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
Excerpt 2.3 (Emma, NEST): “I think a very nice one that a lot of teachers start with is Mark Hancock’s *Pronunciation in Use*. For people like myself who are not RP speakers it provides an audio as well as explanation so if you are a busy teacher with minimal experience it gives you a ready-made lesson and audio.”

When it came to the things teachers disliked, ‘exercises’ were the most frequently mentioned by both groups of teachers. What they disliked mostly was either there were not enough exercises or they were mostly drill-based and controlled. Most of the NESTs and a few NNESTs complained that there were no communicative exercises. The two important things obtained from teachers’ likes and dislikes is that it is important how pronunciation is presented in the books and that it was important that there were enough exercises on a wide range from controlled to communicative.

Teachers were also asked to list the books and other materials they used (see Table 13) so that it would be possible to see how much they were aware of the available pronunciation teaching materials and what type of these materials they would employ most in their teaching practices. In total, NESTs named 13 individual books, but some of those books were mentioned repeatedly (i.e., *Clear Speech* for 10 times, *Well-Said* for 6 times, and *Speech Craft* for 5 times), which brought the number of occurrences in the data obtained from the survey and the interview up to 42. NNESTs named 9 separate books, each of which was mentioned only once. In most cases, NNESTs named these books as the ones they used for their teaching, whereas NESTs mentioned mostly more than one book as either their course book or the material they pulled things from to supplement their other material. Some NESTs asserted that they did not use a textbook since they created their own material, but they noted that they relied on many different books. One of the NESTs (Excerpt 2.4), an experienced pronunciation teacher, stated that a
teacher should not be dependent on one single book to teach pronunciation, but instead should choose from different sources based on their learners’ needs.

*Excerpt 2.4 (Chloe, NEST):* “Scattergun approach where you just take a book and go through it, that’s just like the worst possible thing, so I always tell my students that you have to pick and choose – it’s good to have built up a bit of a library.”

**Table 13. Materials Used to Teach Pronunciation**

<table>
<thead>
<tr>
<th>Sources</th>
<th>NEST (N=34)</th>
<th>NNEST (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>42</td>
<td>15</td>
</tr>
<tr>
<td>Websites</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Software Programs</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Mobile Applications</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Videos (e.g. YouTube, Ted Talks)</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Research articles</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Websites and videos were among the most recurring sources both groups of teachers named (see Table 13). TED Talk videos, NPR and Voice of America videos, various YouTube videos – especially Rachel’s English Channel – movies, interviews, and the videos from many other sources were mentioned frequently. Teachers stated that they used these videos for:

- practice purposes in class (watch the video, read the transcript, and circle particular pronunciation features) (a NEST)
- introducing pronunciation features to students (a NEST and a NNEST)
- shadowing practice (a NEST)
- providing speech samples from native speakers (a NNEST)
- exposing students to different regional dialects (a NNEST)
One of the NNESTs mentioned how using videos contributed to her self-confidence as a teacher (Excerpt 2.5) and the data indicate that some teachers really liked the teaching style of some people they find on YouTube, and they used these videos to teach their students (Excerpt 2.6). Although videos were used by many teachers in the study, one of the experienced NESTs raised concern about the videos that were available on YouTube (Excerpt 2.7) because she did not find them all accurate or appropriate.

_Excerpt 2.5 (Hailey, NNEST):_ “Youtube videos with sound pronunciation demos - because I am not a native speaker myself, _inviting a native speaker to teach on behalf of me through well-chosen videos makes me feel more confident about my teaching._”

_Excerpt 2.6 (Connie, NEST):_ “For example Rachel’s English. I feel like she’s someone who know what she’s talking about, she explains clearly. _So sometimes for instance I will send my students to her videos rather than making my own video saying the same thing as she is._”

_Excerpt 2.7 (Chloe, NEST):_ “_I was looking at some really awful stuff on the internet_ and I was looking at how many views there had been. Like, some of these are over a million views! And like 10,000 likes.”

Websites were among the popular sources used by both groups of teachers. Actually, most of the teachers who were interviewed named ‘websites and online sources’ as the first sources they would check if they wanted to have some ideas about teaching particular pronunciation features. It appears that online materials were a primary source for many teachers because of their accessibility, practicality, and cost. One of the NNESTs said, “_There is a lot of information out there on the Internet that I can tap into for my classes. I have been able to find pretty much everything I need (based on needs analysis of my students' weaknesses) online._” (Vance). Most of the websites teachers mentioned (englishcentral.com, eslactivities.com, international phonetic alphabet websites, youglish.com, forvo.com) were used to find different exercises or listen to the pronunciation of words. Youglish.com and forvo.com are like an online pronunciation dictionary but more than that. (For instance, youglish.com provides YouTube
videos in which people can search for a word or phrase whose pronunciation they want to hear, and they see all the videos having the searched word in three varieties of English. Forvo.com is a multilingual online dictionary to which users can contribute. It basically lists the words whose pronunciation is missing and any user registered to their system can provide its pronunciation. Youglish and Forvo are different that the other dictionaries in terms of providing authentic input.

In addition to websites, software programs and mobile applications had many occurrences in the data. One of the most frequently mentioned software by NESTs was Audacity digital audio recorder which was used mostly used for the purposes of voice recording and analyzing prominence in utterances. Sounds of Speech, a phonetics program developed by the University of Iowa, was mentioned by both groups of teachers, though mostly by NNESTs. This program is available both as a website and a mobile application. Teachers stated they liked it because of the 3D diagrams it provides and because of the example words that are given for each segmental sound. As is clear in Table 14, teachers in this study tended to use technology-based materials as reference sources. This shows the importance of designing reliable materials that are based on research.

Pronunciation is a spoken skill; therefore, sources that work with audio input may be used as frequently as the printed sources. Teachers in this study were asked how frequently they used the sources listed in Table 14. Based on the findings, NNESTs used all listed sources more often than the NESTs; however, according to the results of Mann Whitney Test, only online dictionaries (U=133, p= 0.000) were used significantly more often by the NNESTs. NNESTs’ using a dictionary more often than NESTs is not surprising considering that NESTs have intuitions and acquired knowledge of language that may decrease their need for a dictionary.
Table 14. Frequency of Using Particular Sources in Pronunciation Teaching Practices

<table>
<thead>
<tr>
<th>Source</th>
<th>NESTs (N=34)</th>
<th>NNEST (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Dictionaries*</td>
<td>2.66</td>
<td>3.95</td>
</tr>
<tr>
<td>Printed dictionaries</td>
<td>1.66</td>
<td>2.35</td>
</tr>
<tr>
<td>Text-to-Speech</td>
<td>1.56</td>
<td>2.15</td>
</tr>
<tr>
<td>Automatic Speech Recognition</td>
<td>1.66</td>
<td>1.75</td>
</tr>
<tr>
<td>Speech analyzers</td>
<td>1.72</td>
<td>2.00</td>
</tr>
<tr>
<td>Mobile applications</td>
<td>1.58</td>
<td>1.71</td>
</tr>
<tr>
<td>Software programs</td>
<td>1.66</td>
<td>1.89</td>
</tr>
</tbody>
</table>

(1= never, 2= rarely, 3= sometimes, 4= often, 5= very often)

A closer look at the use of dictionaries in Table 15 below shows that NNESTs used a dictionary very frequently for all the given reasons, yet seeing a word written in phonetic symbols and learning the stress pattern of the words were the reasons that dictionaries were mostly used. NESTs did not seem to use a dictionary very often, but when they did, they mostly used it to check how a word was written in phonetic symbols. These findings show that both groups of teachers checked the phonetic transcription of words for whatever reasons they may have had.
Table 15. Reasons for Using a Dictionary

<table>
<thead>
<tr>
<th>Answer</th>
<th>NEST (N=34)</th>
<th>NNEST (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To check the meaning of a word</td>
<td>41%</td>
<td>70%</td>
</tr>
<tr>
<td>To listen to the pronunciation of a word</td>
<td>47%</td>
<td>80%</td>
</tr>
<tr>
<td>To check how a word is written in phonetic symbols</td>
<td>50%</td>
<td>90%</td>
</tr>
<tr>
<td>To learn the stress pattern of a word (i.e. primary stressed syllable, unstressed syllable)</td>
<td>35%</td>
<td>90%</td>
</tr>
<tr>
<td>Other?</td>
<td>26%</td>
<td>15%</td>
</tr>
</tbody>
</table>

*NOTE:* Numbers in some cells do not add up to 100% since participants could choose more than one option in certain questions.

5.2 Influence of Materials on Teachers’ Teaching Practices

One of the themes during the interviews was the influence of teaching materials on teachers’ teaching practices, especially the first few times they taught pronunciation. For some teachers, general English textbooks were the only source from which they learned about pronunciation or even the reason why they started teaching it; for some, textbooks helped create a structure for their teaching, and for some, textbooks or teacher’s manuals boosted their confidence. Additionally, some teachers took textbooks as a starting point when they had to learn about a pronunciation feature that they were not very knowledgeable about or when they needed to refresh their knowledge in a pronunciation feature. The influence of teaching materials may be larger for less experienced pronunciation teachers; most of the NESTs and NNESTs said they were more dependent on their course book when they first started teaching pronunciation.

In the following excerpts, four experienced NESTs reflected on their less experienced times in teaching pronunciation. Susan (Excerpt 2.8), who claims to be very confident in teaching pronunciation now and who she knows everything that she wants to do in her class now relied on her coursebook provided to her to teach ITAs. The importance of the coursebook for her lies in the words “kind of learning along with the textbook.” Susan took a pronunciation
teaching class during her master’s degree and she was very happy with her instructor and the overall experience in the class, but she still talked about ‘learning along the textbook’ highlighting the importance of the textbook in her first teaching experiences.

*Excerpt 2.8 (Susan, NEST):* “… when I started in 1998, I because I hadn’t taught this um sort of intensive of a standalone ITA course before, I really latched onto the text book that was used in the program at the time. … um but I just, I remember, I remember kind of learning along with the textbook, and then um because many, not all, but many of the explanations, particularly the suprasegmental explanations in the text in that text, are, were clear to me. I mean they made sense to me”

Another NEST, Cat (Excerpt 2.9), noted that she tended to be dependent on her textbook the first time she taught a course; however, she also said that she was open to modifying or supplementing the textbook with other materials and to creating her own materials. Lilly (Excerpt 2.10), who also relied heavily on the textbook in her less experienced times, said the textbook contributed to her knowledge about L1 transfer which may mean that the textbook was informative about the common difficulties of students from certain L1 backgrounds. Lastly, Casey (Excerpt 2.11) touched upon the influence of the materials she learned about and used during her graduate studies on her feeling ready to teach a stand-alone pronunciation class.

*Excerpt 2.9 (Cat, NEST):* “yeah I think it’s kind of like all of those things. Because usually when I am first teaching something, or for the first time I will stick pretty much to the book or things that I find like on teacher forums um but then it might not work exactly the way I want it or have to adapt it to my class so um. Sometimes I create my own things. But it is mostly like adapting to fit my particular needs.”

*Excerpt 2.10 (Lilly, NEST):* “Hmm. Probably the books. I relied really heavily on the books. Um yeah I remember there were some things in the books that um that helped me get an idea about L1 transfer.”

*Excerpt 2.11 (Casey, NEST):* “You know a little overgeneralized, but um I guess I felt pretty prepared but I don’t know if I would have felt as prepared for a full semester class right away, without Dr. Dickerson’s materials. It would have been like okay, I can do a two-week workshop or you know, one day. But if I had been
asked to do an in-depth I would have been like woh, what am I going to do. I would have used a textbook. I would have.”

Similar comments came from NNESTs in the study. Zach (Excerpt 2.12) reported feeling less secure when he first taught something and depending on the textbook because of the insecurity feeling. Olivia (Excerpt 2.13) mentioned she followed the TM when she started to work at her university; however, the more experienced she became, she started to notice the things that did not fit into her class. Hailey (Excerpt 2.14) was another teacher with little experience in pronunciation teaching and during the interview she raised issues regarding her confidence in teaching pronunciation because of being a non-native English speaker. She was a teacher who would not prefer using her own voice in teaching but the audio recording of her textbook or the recordings of another native speaker who would usually be a friend of hers. As may be expected from her confidence level in pronunciation, she relied on the TM she had. In the case of this teacher, she had contact with the author of her teaching materials, thus she could always consult her whenever she needed clarification for something in the TM which may have encouraged her dependence on the teaching materials and the TM.

Excerpt 2.12 (Zach, NNEST): “Yeah, especially like teach skills for the first time. I feel less secure. So, for the skills that I teach for the first time or I am not as familiar with. Um I rely more heavily on teacher's book.”

Excerpt 2.13 (Olivia, NNEST): “When I was younger, when I just started studying, at the beginning when I started my work here at the university… it was like uh trying to follow the teacher’s books, but then I saw that what worked for that teacher… but I saw that the instructions the teacher’s book gave them, sometimes well very often, quite often, didn’t fit my class.”

Excerpt 2.14 (Hailey, NNEST): “Yeah, she created it and she also created the teacher guide and I basically rely much on her teacher guide.”

Based on what some NESTs and NNESTs reported, sometimes textbooks may function as the syllabus or as the core structure of the course. This was true for less experienced and less
confident teachers as well as for more confident and experienced teachers. Language background did not seem to create a difference in this issue since teachers from both groups said it was good to have a textbook because it provided the “skeleton” (Isabelle, NNEST), “layout” (David, NEST), and the “structure” (Zach, NNEST) of their course. It was also shown that teachers tended to cover the pronunciation features that were included in their textbooks as stated by Olivia in Excerpt 15. Olivia taught pronunciation as an integrated part of her general English skill class and she worked on the pronunciation features that were included in her coursebook. It is clear from Olivia’s statement that she would address pronunciation as much as she had it in her coursebook. That shows a book’s inclusion or omission of a pronunciation feature may both affect its being taught and the impressions that teachers may form about the importance of the pronunciation feature. In Excerpt 2.16, Beste said she covered word stress while teaching segmentals because the words came with their stress patterns in the book. Beste said she did not explicitly teach word stress although she talked about what the stress pattern of words were.

Clearly, the way the textbook was designed encouraged her to look at the stress pattern of words which may indicate the positive influence of her teaching material on her teaching practice

*Excerpt 2.15 (Olivia, NNEST):* “Um, it’s hard to say but because uh I don’t have somebody, so much time to analyze the needs okay and even if I realize that there is a need, there is not always time for me to prepare. *If I don’t have it in my textbook, there is not much time for me to prepare for every class.* … Because we don’t have those sounds in our Ukrainian. And I will definitely do an exercise if it’s in the textbook and *I will probably do some very few exercises on suprasegmental, I mean intonation.*”

*Excerpt 2.16 (Beste, NNEST):* “By the way, when you study the sounds I mean consonants actually, segmentals in the second semester as well of course *you have to mention stress because each word comes with its own stress in the book,* it lists it there so you have to teach it. I mean I check the dictionary in before going to class and we study we mention the stress of the words as well. It’s not just studying the consonants. We also study stress but it is not about the logic of stress, it’s about I mean which word has which stress.”
In Excerpt 2.17, Zach reports that he mostly focused on segmental features in his class and the main reason of that was because the textbook’s focus was on them. This is also a clear indication of the influence of teaching materials, although not necessarily positively, since the materials encouraged the teacher to be limited to only one group of pronunciation features in teaching.

*Excerpt 2.17 (Zach, NNEST):* “I focused mainly on segmentals um for one thing because the textbook the majority of the content was segmentals.”

The fact that materials may influence some teachers was recognized by a few more experienced teachers in this study and they suggested that this could in return be influential on the prioritization of certain pronunciation features (Excerpt 2.18) and the order these features are taught (Excerpt 2.19).

*Excerpt 2.18 (Amelia, NEST):* “But if it’s in the book, if it’s something easy like or yeah, this is something I can help the students with, oh yeah. Someone’s definitely going to prioritize that, do it or think it. I think it shapes priorities, especially because a lot of, not a lot, but when there are pronunciation textbooks that focus on segmentals mainly, again looks like prioritization.”

*Excerpt 2.19 (Connie, NEST):* “… we have noticed that several books, well we’ve been analyzing a couple, and some introduce thought groups at the very beginning other introduce thought groups at the very end. So for example, *Clear Speech* and *Well Said* I believe um include them at the very end… It was an interesting um finding, or observation we made and also I think that um could be important for teachers whether they are new to teaching pronunciation or not but especially new to teaching pronunciation um how everything is sequenced.”

There were other reported influences of teaching materials on teachers in this study. Two NNESTs (Iris & Mira) said textbooks were learning sources for them. Iris was a teacher who were not trained to teach English; her major was public relations. However, the reason she taught English was that her English was very good and she could be hired as an English teacher at
private language teaching centers in her country. Iris said pronunciation took her attention due to the pronunciation component integrated into the textbook she taught with, which made her think it was important for her students. Iris stated that it was also through the exercises in the general English textbooks that she learned about English pronunciation. Mira, on the other hand, took a class on how to teach pronunciation but she said she used the teacher’s manual of the textbook she used “to educate herself at the same time” (Excerpt 2.20).

**Excerpt 2.20 (Iris, NNEST):** “I started to learn pronunciation because of that. I mean not because of that, but through that. … Because when I learned nobody ever taught me pronunciation even though the books I choose they have boxes and such. Um, *everything that I do know how to use that's pronunciation um exercises they were integrating.* I know these things are important to teach my students, then I start paying attention, and research and you know I have got to learn as I go.”

Learning from teaching materials were not only Iris and Mira; three NESTs said they learned different things from the materials they used so far. Cat said the book she used provided tips about difficulties of learners based on their first language; thus she learned about those from that source and she said it helped her lesson planning since it was easier to know what to work on once she knew what struggles students may have had. Lilly and Casey were experienced teachers of English pronunciation, but these two teachers said they always learned from materials about how to address the same things differently and about more innovative approaches of teaching. Another NEST, Jayme, said it was always good to have more materials since they helped her keep her lessons fresh.

Some teachers are in general more comfortable pulling from different books and creating their own teaching structure; however, some teachers just like sticking with one single book. Data show that whether teachers like to go with multiple materials or a single book could be an experience or training issue. Isabelle (Excerpt 2.21) was teaching pronunciation for the first time
at the time of her interview. Although she had taken a course on how to teach pronunciation and had tutoring experience during that course, she still did not seem very willing to and confident about selecting materials from different sources as long as she had one good book she could use as her primary teaching material.

**Excerpt 2.21 (Isabelle, NNEST):** Um yeah. It depends, if I don’t find a really good book, I might get different sections of different books and combine them. But I wouldn’t be able to do a lot of books and just take a piece of each of them. I don’t know.

Like Isabelle, Noelle (Excerpt 2.22) said she felt more confident when she had a textbook. She thought having a book created a sense of security for students, and the same may be true for her since she said she needed a good book because she was not trained to teach pronunciation. Noelle taught English for more than 20 years but she had been teaching English pronunciation for the last 7 years at the time of the interview. She used the textbook *Ship and Sheep* 3rd (*Baker*, 2007) that her professor used when she was a BA student.

**Excerpt 2.22 (Noelle, NNEST):** “… since I didn’t have my full training in teaching pronunciation, um I mean that wasn’t how I started for, I feel more comfortable with a good course book and then I mean I could add my own materials or exercises whatever but it’s just good to have something like a course book and take out things or add things and yeah I feel more comfortable with a good book and probably it is a sense of some kind of security to students as well because they got something to follow so that’s more systematic and organized.”

Even though many teachers, especially less experienced and less trained teachers, may go with a single-book approach, it may not be the best for each context since there are different needs of different students in each class. One of the teachers in this study, Chloe, was a teacher trainer as well and she thought the single book approach was the worst option a teacher could choose (Excerpt 2.23). What Chloe said may be true mostly, yet it is a fact that being able to choose from
different materials and having a library of tasks and activities may be something that comes with experience.

*Excerpt 2.23 (Chloe, NEST): “And that’s the um scatter gun approach where you just take a book and go through it and that’s just like the worst possible thing so I always tell my students that you have to pick and choose. And so it’s good to have built up a bit of a library of tasks and activities. Because it really depends on where your students’ problems lie. And so you can’t just use a book and go straight through it. It’s wasting so much time.”*

5.3 Summary of the Findings

Findings of the second research question indicated that most of the teachers in both groups used a textbook while teaching pronunciation. It was not always the teachers choosing the books they used, because sometimes they were assigned to teach with a certain book by a course coordinator or by the institution they taught at. Teachers’ preference for using a single book as their teaching material or not appeared to be affected by their experience in pronunciation teaching. There were a few teachers who thought having a single coursebook was something comforting because it functioned like a syllabus providing structure to the course. Some of these teachers said they would feel less comfortable if they were to start without a book and had to pull from different materials. However, a few experienced teachers thought the single-book approach was detrimental for teaching.

The effect of experience on teachers’ preference of using a single book or not makes sense since less confident or less experienced teachers may feel less comfortable about creating a syllabus for their course, and having a textbook may help with this. This does not mean teachers must depend heavily on books or that they will always do so. According to research, teachers may rely on readily available teaching materials for a while until they feel comfortable creating their own materials or syllabi (Loewenberg Ball & Feiman-Nemser, 1988; Remillard, 2000). In contrast, experienced teachers may have a clear idea about what to teach and what kind of
materials they want for their teaching purposes as was the case in this study. These teachers do not need the help of a textbook to provide a structure for class.

Teachers’ likes and dislikes about the textbooks they used showed that the way pronunciation is presented in textbooks is important for both NESTs and NNESTs. It is especially important if the book can give ideas about how to teach pronunciation features. Teachers also liked having enough varied types of exercises in pronunciation textbooks.

Other materials used by teachers included websites, authentic or instructional videos, mobile applications and dictionaries. The findings of this question showed that many teachers used the Internet as the primary source when they needed to find information about what a pronunciation feature entails or how it can be taught. Additionally, many teachers used online videos to create practice with authentic speech in class or to have another person explain a pronunciation feature. Mobile applications were also used frequently by the participants of this study. For instance, Sounds of Speech, developed by University of Iowa, was a frequently named source. Sounds of Speech, originally a web site, gives information about each segment of English. It includes a description of each sound, an animated picture of the mouth, and a short video recording of someone’s mouth producing each sound.

Online dictionaries were used by NNESTs more than by NESTS. Online dictionaries were mostly used to check the definition of words and listen to the pronunciation of words. Listening to the pronunciation of words would clearly not be possible with a printed dictionary. With printed dictionaries, one should know how to read phonetic symbols to be able to know how a word sounds, but with an online dictionary, anybody can learn how to pronounce a word.

Lastly, the findings of this study showed that teaching materials, especially textbooks, had various influences on teachers. According to the results, these influences were stronger for
less experienced teachers because they were mostly stated by less experienced teachers. One of the influences of textbooks was on teachers’ knowledge; a few teachers stated that they learned from the book they taught with because it was English books where they learned English pronunciation from. Another influence of the books was affecting teachers’ thoughts about teaching priorities in pronunciation. Some teachers taught mostly segmentals because of the textbook they used. Another influence the books had was increasing teachers’ confidence since some said they would have not known what to do without a book when they first started teaching pronunciation. For these first-time teachers, books constituted the structure of the course.

The findings of this chapter tell us that not all teachers are aware of what pronunciation teaching materials exist. It is either because they were always assigned to teach with a book or they kept using the same textbook for use and were never interested in investigating other books. If teachers are not knowledgeable about student materials, they will be even less knowledgeable about TMs. Considering the existence of such a population, any author interested in reaching more teachers for the use of a TM should look for effective ways of making it more visible. Another takeaway for a material developer is creating online materials. The findings of this question show that we live in a time when teachers go with online materials primarily. They prefer online formats to printed ones as was the case for dictionaries. One way of making TMs more beneficial and accessible is to design it either fully online or supplemented by online components. Teachers in this study admitted to using videos very frequently for pronunciation teaching and as will be seen in the next chapter, videos were one of the things teachers liked most in the OTM used in this study. The last point to be taken from the findings of research question 2 is that some teachers are more dependent on the materials they use, especially if they are less experienced. There may be teachers seeking content-related information in a textbook, or
teachers who learn English pronunciation from their textbooks. Therefore, materials developers should bear in mind that a TM is not a teacher trainer but like any material, it may have a training role at times, depending on the teacher using it. Thus, TMs may be the most appropriate material to provide pedagogical information. When it comes to creating an OTM, it must be noted that the online platform may bring different influences than a printed TM. For instance, an OTM, like the one used in this study, may not necessarily affect teachers’ thinking in terms of what is most important to teach first since the content is not presented in a linear way as in a book, but rather presented as individual items on a menu. This may either create a positive effect, making teachers get actively involved in deciding what they want to teach first, or it may create a negative effect since it may make some new teachers feel uncomfortable. To get rid of such a risk, an explanation on teaching priorities and how one can decide about what to teach first may be presented separately.

The big takeaway of this question is that any material developer interested in creating a TM should do an analysis about what materials the target group of teachers use and how they use these materials. Potential roles and influences of any TM should be thought out carefully based on this analysis. Considering the growing number of people using online materials, material developers may want to go with an OTM which they can update based on teacher feedback and with which they can provide information in different modes. For instance, by creating clickable words as was the case in the OTM used for this study, material developers may save teachers’ time from going to an online dictionary to listen to the pronunciation of a word.
CHAPTER 6: RESULTS FOR RESEARCH QUESTION 3

The purpose of the third research question “How do teachers interact with the OTM”? was to explore how teachers used the OTM, how long they usually spent on it, what functions of it they used most, and what potential problems they struggled with. As previously mentioned in the literature review, an OTM may offer advantages such as ease of accessibility, providing information in multimodal forms, and practicality; however, it may also bring potential problems from internet speed or access issues, technical issues stemming from a web browser a teacher uses at a time, or even a teacher’s disliking electronic materials. Therefore, this question aimed to probe how and how much teachers used the OTM.

For research question 3, all teachers’ data were used to find out how frequently the OTM and its features were used. However, only eight teachers’ (five NESTs and three NNESTs) user data were used to describe the way the OTM was used. These teachers completed every step of data collection starting from the initial online survey. The teachers were given access to the link of the OTM (http://sonsaat.public.iastate.edu/projects.html), and they were also given a link on which their students could have access to the learner materials (http://sonsaat.public.iastate.edu/prosite/learnerspage.html). The teachers were free to teach any of the seven pronunciation features presented to them in the materials.

This question was answered by the descriptive data obtained from teachers’ interaction with the OTM. Teachers’ interaction with the online TM was recorded by Inspectlet (http://www.inspectlet.com/feature/session-recording), a screen-recording and real time data tracking program. This program enabled me to see what features were used most in the manual and what features were not used since it provided eye-tracking (Figure 10) and click heatmaps (Figure 11). Eye-tracking heatmaps of Inspectlet are created based on users’ “overlaying mouse
movements” (Inspectlet, 2017) while click heatmaps are created based on users’ clicks on the website, in this case the OTM. For instance, Figure 10 shows that teachers who used the final intonation – lesson objectives page laid their mouse over on the phrase “intonation differences” in lesson objective 2 and the word “elliptical” in lesson objective 3. This suggests that these words captured the attention of most teachers. Figure 11 shows the heatmap of the same page based on users’ clicks on the page. In both types of heatmaps, the color turns from light blue/green to yellow and red the more something is clicked or has a mouse overlay.

Figure 10. Inspectlet eye-tracking heatmaps

Inspectlet was also able to provide analytic data about the overall use of the OTM by providing information about how many times the website was visited on a day. It was also possible to exclude certain users from Inspectlet recording. For instance, I excluded my own IP in Inspectlet.
Findings of this question may help pronunciation materials developers or researchers understand what is most important to teachers in a TM. Seeing which parts of the OTM teachers used most frequently gives us an insight about what teachers need and expect from the OTM. Understanding the needs and expectations of teachers helps to understand teachers’ cognitions, especially related to their knowledge. The first section of the chapter shows us what units or parts of units were visited most frequently by all teachers who used the OTM. This type of information may indicate what topics teachers need to consult for an OTM in pronunciation teaching or what features of the OTM can help them most.

The results of this question also present the reasons why teachers like online materials in general. Knowing this may help developers produce more effective OTMs which may capture teachers’ attention more easily and therefore reach the target population more easily.

Additionally, this chapter presents what teachers used in the OTM most and least frequently.
This in turn may help publishers understand what a group of teachers may need most help with from a TM and what kind of support must be provided for them.

This chapter also informs us about technical problems teachers may have had with the OTM. Additionally, the findings of this chapter offer information about teachers’ attitudes towards an OTM, and whether their personal habits regarding the use of technology affect their use and judgement of the OTM. This chapter’s findings may be the most important and clear ones in terms of showing which features are most important for a pronunciation TM and which features of an OTM can enhance the effectiveness of an OTM compared to a printed TM.

6.1 Overall Use of the Online Teacher’s Manual

The links for the OTM and online learner’s materials were shared with more than 30 teachers at the beginning of February, 2017. Eight teachers agreed to teach with the materials and fill out the weekly journals and to be interviewed about their use of the materials. However, based on the data obtained from Inspectlet, the OTM and the accompanying learner’s materials were used not only by the eight teachers who went through each step of the study but also by many other teachers and/or possibly their learners. Teachers other than the participants of this study could have got the link to the OTM through their colleagues or by discovering them on my website. All users’ data were used to report on the overall use of the OTM and only the data of this study’s participants (N=8) were used to report on the ways teachers used the OTM. For analysis purposes, Inspectlet data were limited to a certain date range (March 28th – June 21st), which was set by the first and last use of the materials by the participants of this study. In total 345 session recordings were done between March 28th and June 21st, and 46 of these sessions were the recordings of this study’s participants. These 46 sessions were separately analyzed in the following sections.
Table 16 shows the most frequently visited pages in the OTM as well as the parts that were clicked most frequently based on the visual data obtained from click heatmaps and eye-tracking heatmaps. These numbers were not collected based on only one time use of each page by each user; that is, if a user kept going back to the same page (topic), each time was counted separately. For instance, if a teacher kept using the word stress chapter over and over, it increased the frequency of use of the pages that chapter is located. According to Table 16, the top ten most frequently visited pages included mostly suprasegmental chapters (86%) as only two of those most frequently visited pages were related to segmental features (14%). Intonation (34%), including both final and non-final intonation, and word stress (34%) were the most frequently used chapters among suprasegmentals which were followed by sentence focus (18%).

**Table 16. Top Ten Most Frequently Visited Pages and Parts on Pages**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Total Visits</th>
<th>Total Visits in %</th>
<th>Most frequently clicked elements on a page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Stress - Syllable Structure</td>
<td>106</td>
<td>21%</td>
<td>1. Download the student’s material</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. How do we divide words into syllables?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. How do we define a syllable?</td>
</tr>
<tr>
<td>Word Stress - Lesson objectives</td>
<td>64</td>
<td>13%</td>
<td>1. Rationale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Download the entire chapter (Student’s book)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Download the entire chapter (Teacher’s Manual)</td>
</tr>
<tr>
<td>Final Intonation – Lesson objectives</td>
<td>64</td>
<td>13%</td>
<td>1. Rationale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Warmup</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Download the page as a PDF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. “Elliptical” in “Learners will match elliptical phrases to their full sentence equivalents.”</td>
</tr>
<tr>
<td>Sentence Focus – Lesson Objectives</td>
<td>57</td>
<td>11%</td>
<td>1. Rationale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Warmup &amp; Phrase focus</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Download the entire chapter (Student’s book)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Download the entire chapter (Teacher’s Manual)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Download the page as a PDF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6. Communication practice</td>
</tr>
<tr>
<td>Nonfinal intonation – Lesson Objectives</td>
<td>53</td>
<td>11%</td>
<td>1. Warmup</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Rationale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Download the entire chapter (Student’s book)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Download the entire chapter (Teacher’s Manual)</td>
</tr>
</tbody>
</table>
Click heatmaps were used to find out what parts of a page were clicked most frequently. For instance, Figure 12 indicates that teachers mostly clicked on the second tab of the part explaining the rationale of the chapter. Additionally, “warmup & phrase focus” and “communication practice” on the upper menu were clicked several times while “normal focus & names” was not clicked at all.
However, the outline of the sentence focus chapter (Figure 13) indicates that some exercises under “normal focus & names” were clicked by some teachers, although it was not the most frequently clicked element. Figure 12 additionally shows that the entire chapter of student’s materials was the one which was clicked most frequently, which may suggest that it was the material teachers most wanted to have a printed copy of.

According to Table 16, the tabs explaining the “rationale” of each chapter were always the most or second-most frequently clicked features in the chapter. This suggests that teachers were interested in learning why it is good to know and teach a certain feature of pronunciation. Table 16 also shows that teachers clicked on the links to download the entire chapter for both student materials and the TM on the lesson objective pages. This suggests that teachers liked to download a copy of the materials for printing or keeping a copy, possibly because of technological concerns. Although both student and teacher materials were downloaded by teachers, student materials were downloaded more than the TM.
Another finding based on the most frequently used pages and parts on those pages (Table 16) is that mostly warmup activities or the first few exercises of each chapter were focused on compared to the rest of the exercises. The instructional videos page was not one of the most frequently used pages in the OTM. This could be because the videos on that page were also located in their relevant chapters; thus, teachers may have watched them in those chapters. However, Figure 14 shows that some teachers checked the videos presented all together on the instructional videos page. There were 18 total visits to this page, and the most frequently clicked videos were “final intonation” and “how to teach sounds – production exercises.” This type of data does not tell whether teachers watched the videos, only that they clicked on them. However, screen recordings of users can be used to tell how long teachers watched the videos.
6.2 Teachers’ who used the Online Teacher’s Manual

In this section, detailed information about the teachers who used the OTM is provided to help understand their interaction with the OTM better in the following section. As shown in Table 17, there were five NESTs and three NNESTs in this group of teachers, and their English pronunciation teaching experience varied from one year to more than 20 years. However, half of the teachers had at least more than 11 years of experience whereas the others had experience up to six years. Three of these eight teachers taught in EFL settings; therefore, these teachers had learners from one language background while the rest of the teachers had students from various L1 backgrounds in their oral communication skills and pronunciation classes. Only one NEST (Emma) and one NNEST (Iris) had not taken a course on English pronunciation or how to teach pronunciation. These two teachers reported having learned how to teach pronunciation as they taught it. Specifically, Iris said she never taught pronunciation as a stand-alone course and she learned everything she knew about English pronunciation from the small sections dedicated to it in general English skills books.
Table 17. Participants who Taught with the OTM

<table>
<thead>
<tr>
<th>Name</th>
<th>Length of pronunciation teaching</th>
<th>Teaching Setting</th>
<th>Took a pronunciation pedagogy course</th>
<th>Use a book for pronunciation teaching</th>
<th>Use online resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat</td>
<td>3 years</td>
<td>ESL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Casey</td>
<td>20+ years</td>
<td>ESL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>William</td>
<td>20+ years</td>
<td>EFL</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Emma</td>
<td>6 years</td>
<td>ESL</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Jayme</td>
<td>4 years</td>
<td>ESL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Isabelle</td>
<td>1 year</td>
<td>ESL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Iris</td>
<td>11 years</td>
<td>EFL</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Olivia</td>
<td>20+ years</td>
<td>EFL</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

To understand teachers’ interaction with the OTM, it is useful to know what kinds of materials these teachers use to teach pronunciation in general. Four of the NESTs in the study said they had a stand-alone book while teaching pronunciation, and they were the ones who chose the book (see Appendix G for the list of the books named by teachers). The only NEST who did not teach with a stand-alone book noted that she used more than one book in her teaching and took different parts of various book based on her learners’ needs. Of the three NNESTs, only one (Isabelle) used a book while teaching oral communication skills (for international teaching assistants) in which pronunciation was a big component. However, this teacher was handed the class materials by the course coordinator. Two other NNESTs said they used pronunciation sections in their general English skills book to teach pronunciation.

Seven teachers said they used online materials for pronunciation teaching. For some, online materials constituted the primary source whenever they had to figure out how to teach a pronunciation feature, and for others, online materials meant bringing additional examples and exercises for class use or as homework. Some teachers also liked online materials since they...
could encourage autonomous learning for the learners and motivate learners for pronunciation practice outside of the class. Teachers expressed that they preferred online sources to find more example or exercises (Excerpt 3.1 & 3.2). Cat, however, stated that she would go to her textbook to learn about something and the reason she gave for it was the practicality the textbook provided since she knew where she would find concise information.

_Excerpt 3.1 (Cat, NEST):_ “… when I need to find out something, I go to the book. And then I use google to find like I was trying to find um more examples of words with the g sound like measure um and so I just copied that sound symbol from the IPA keyboard into Google, and tried to find more sources, um examples there. But like when I first want to learn about something I go to my textbook.”

_Excerpt 3.2 (Olivia, NNEST):_ “Uh yes. I don’t need because sometimes I see that there are excess phonetic exercises in the book and I see that they are useless. For my students okay, so I can adapt these exercises if I have time, or I will look for another exercise in the textbook or on the internet probably.”

In contrast, Iris (Excerpt 3.3) preferred using online sources to figure out how to teach something. When asked what her primary teaching source was, her answer was “the internet, that’s for sure.” Iris had not taken a pronunciation course and learned everything she knew about English pronunciation from general English skills books. Considering that she never had a stand-alone pronunciation book either, Googling was a convenient source for her to find teaching tips, examples and exercises. In Excerpt 3.4, Isabelle said the reason she used online sources was because she had a lab day for her oral communications class and she wanted learners to take the advantage of technological facilities they had for this class.

_Excerpt 3.3 (Iris, NNEST):_ “Um not particularly, like if I want to teach something then I’ll google it and I’ll find some different sources. I don’t necessarily always go back, get back to the same sources.”

_Excerpt 3.4 (Isabelle, NNEST):_ “…um if well I’m, in a lab once a week so I try to have something that students can do online because we have the computers. Online, on those days I specifically look for online materials or things that can be done online. “
Two of the teachers (Excerpt 3.5 & 3.6) showed an interest in the videos they could find online. The first, Jayme, clearly liked how another teacher explained intonation. Jayme was one of the teachers who did not like teaching intonation because according to her there are no “hard and fast rules” about intonation. This may be why she liked a clear explanation provided by another person in a video. Another NEST, Emma (Excerpt 3.6), expressed that she was interested in blogs and videos because she found explanations and demonstrations about different experts’ pronunciation teaching techniques. Emma also highlighted the importance of accessibility provided by the online nature of these materials.

Excerpt 3.5 (Jayme, NEST): “I use lots of YouTube videos, um and the um, you know the Ted Talks… By um, I can’t remember what his name is, I haven’t used it for a while but when I first started teaching it I found him. It was a hilarious video. It’s about this English teacher and he is slightly mad and he shows people what intonation is and it is a really good film. … He is explaining what intonation is. But it is quite entertaining the way he does it.”

Excerpt 3.6 (Emma, NEST): “…I have definitely used Laura Patsko’s blog, which I think is ELF uh English as a Lingua Franca…Her blog is lovely and it gives lots of ideas and materials and resources as well. I just love that we’re living in an age now where people are giving free resources away because you know people can learn so easily that way. Um I did look at Adrian Underhill’s you know he has the range of short videos at the moment on his particular technique… I think he is now coming around and from what I see on his online materials he is starting to back down in his RP only kind of methods, but he certainly made things accessible and the videos are great you know they give demonstrations of his techniques that people can copy um and resources as well so his has been very accessible as well.”

The teachers in the next two excerpts were both very experienced teachers and both were highly aware of most of the pronunciation teaching materials in the market. These two teachers, in contrast to others, had their own way of teaching things based on their experience, and based on their reporting they were the ones who used online materials least among all the teachers. Casey (Excerpt 3.7) used online sources to provide learners extra practice opportunities and
similarly, William (Excerpt 3.8) recommended online materials to his students because he believes that is how younger people like learning. Additionally, William said he did not believe technology added anything to special to pronunciation teaching since he believed it just presented traditional sources in nicer ways.

*Excerpt 3.7 (Casey, NEST):* “…I mean I have resources I like to show the students. Uh for practicing or for improving pronunciation. So, *if they really want more practice on certain sounds I will show them that university of Iowa site, and uh Rachel’s English.*”

*Excerpt 3.8 (William, NEST):* “*I’m not a great user of technology really, not because I’m a technophobe but because I’ve not I often think technologies basically use the same methodologies as traditional resources it just looks nicer. For example, most of the online stuff that I’ve seen is just listen and repeat. I’d probably use online resources more for reference rather than actual teaching. I mean like there’s loads of online pronunciation dictionaries for example so if you’ve got a proper noun and you want to know how it’s pronounced I would probably look at an online resource. I know there’s loads of applications now. I mean Clear Speech has got an app, um Sound Foundation. *I personally don’t use them very much but I do recommend them to students because you know that’s how students, most of my students are kind of young adults, teenagers, that’s how they learn now.*”

### 6.3 Teachers’ Interaction with the Online Teacher’s Manual

As discussed in the previous section, all eight teachers used online materials to some extent, either as learning and teaching resources for themselves or as additional practice sources for their learners. Even the teacher who used online materials least (William) said he was not a “technophobe”; thus, it was assumed that they would not have any difficulties in using an OTM. However, it is never easy to tell how teachers may react to new materials, especially when they are presented in a different format. In this section, the interactions of the teachers with the OTM are analyzed.
Teachers in this study were asked to teach one segmental, one suprasegmental and a third topic of their own choice. However, they were free to choose any three topics they liked to teach. From the teachers who tried out the materials, one (Emma) only had the chance to teach one topic; therefore, she filled out only one weekly journal. Other teachers filled out two or three weekly journals, and they reported on the following things related to their interaction with the OTM in their weekly journals:

- What features of pronunciation they taught
- How much time they spent using the OTM
- For what purposes they used the OTM
- Whether they had any technical issues

The topics taught by the teachers are presented in Table 18. Of the 20 topics teachers taught, 70% included suprasegmental topics. Intonation, including both final and non-final, was the most frequently taught suprasegmental topic, followed by word stress and sentence focus respectively. The rest of the topics (30%) included segmental features involving dictionary symbols (an introduction to vowels, consonants, spelling-pronunciation relationship, and phonetic transcription), /n/, /l/, /r/ and /b/ sounds. As seen in Table 18, all teachers who taught three topics went for two suprasegmental and one segmental topic.

Table 18. Topics taught by 8 Teachers

<table>
<thead>
<tr>
<th>Name</th>
<th>Topic 1</th>
<th>Topic 2</th>
<th>Topic 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEST</td>
<td>Cat</td>
<td>Sentence focus</td>
<td>[b]</td>
</tr>
<tr>
<td>NEST</td>
<td>Casey</td>
<td>[n], [l], [r]</td>
<td>Final intonation</td>
</tr>
<tr>
<td>NEST</td>
<td>William</td>
<td>Dictionary symbols</td>
<td>Word stress</td>
</tr>
<tr>
<td>NEST</td>
<td>Emma</td>
<td>Sentence focus</td>
<td>-</td>
</tr>
<tr>
<td>NEST</td>
<td>Jayme</td>
<td>Dictionary symbols</td>
<td>Word stress</td>
</tr>
<tr>
<td>NNEST</td>
<td>Isabelle</td>
<td>Non-final intonation</td>
<td>[n], [l], [r]</td>
</tr>
<tr>
<td>NNEST</td>
<td>Iris</td>
<td>Final intonation</td>
<td>Word stress</td>
</tr>
<tr>
<td>NNEST</td>
<td>Olivia</td>
<td>Dictionary symbols</td>
<td>Sentence focus</td>
</tr>
</tbody>
</table>
Another important point was how much time teachers spent using the OTM. Information related to the time teachers spent in using the OTM came from two sources: teachers’ own reports in the weekly journals and the screen recordings of Inspectlet.

The average time teachers spent using the OTM, both based on their own reports and Inspectlet, was calculated by dividing the total number of minutes they spent using the OTM into the number of times they used it. The time teachers reported in the weekly journals (see Figure 15) and the time indicated by Inspectlet (see Figure 16) show differences because sometimes teachers reported the time they used the online student material as well, and they gave an estimated time based on what they remembered. Time-related information obtained from Inspectlet is limited to teacher’s use of the OTM. For instance, Olivia’s average time using the OTM was 110 minutes based on her weekly journal reports, but 36.5 based on Inspectlet. The reason is she used the OTM only with one of the topics she taught, while she used the online student material with the other topic she taught.

![Figure 15. Average Time for Using TM based on Teachers’ Weekly Journal Reports](image-url)
Real-time data by Inspectlet indicated that the teachers who used the OTM most were Iris, Olivia, Cat, Emma, and Isabelle. The teachers who used the OTM least were Jayme, Casey, and William. Of the teachers who used the OTM most frequently, two (Iris and Olivia) taught pronunciation only as an integrated part of their class if there was a pronunciation task in their general English skills books. Additionally, Iris took no pronunciation courses, and she learned English pronunciation from general English skills books. Cat and Isabelle did not have much pronunciation teaching experience, and Emma, who had not taken a pronunciation course and learned pronunciation teaching from her practical teaching experience, preferred using parts of different materials instead of going with one single book approach. William, Jayme, and Casey reported that they did not use the OTM much, especially Casey, who said she did not use it at all. All these three teachers had pronunciation training and two (William and Casey) had long years of teaching experience. Casey had taught pronunciation pedagogy classes and worked with the authors of the OTM for a while; therefore, she was previously familiar with the materials in the study.

![Figure 16. Average time for using TM based on Inspectlet data](image-url)
When teachers were asked about their purposes for using the OTM in weekly journals (see Figure 17), most (N=6) referred to things related to “guidance,” including checking their understanding about the topic, studying the topic, ensuring their own interpretation of the exercises, checking if there was anything new for them to learn, better understanding the feature they wanted to teach, clarifying the goals of the teaching topic, and as a guide preparing themselves for the lesson. The second most frequently reported purpose for using the OTM was to download the student material or the OTM (N=4). One of the NNESTs (Isabelle) said she printed the OTM and used it as her teaching handout in class. She additionally highlighted the information points to draw students’ attention to them. Three teachers (Cat, William, and Iris) stated that they used the OTM to watch the instructional videos. Cat also noted that she used one of the videos in class to explain to her student the difference between the /b/ and /p/ sounds.

![Pie chart showing purpose of using the OTM based on weekly journal reports](image)

**Figure 17.** Purpose of using the OTM based on weekly journal reports

In contrast to the general belief about TMs, the answer key to the exercises was not the most frequently reported reason for teachers’ using the OTM. Only three teachers (Casey, Isabelle, and Olivia) said that they used the OTM for the answer key, but these teachers also said
they did not need to see the answer key for all exercises. Other than the reasons shown in Figure 18, one teachers (Jayme) said she used the OTM only for her interest, and one (William) said he used the OTM also for listening to the dialogues.

The results in relation to the purpose of using the OTM above relied on teachers’ own reports in the weekly journals. A closer look at the real-time user data obtained from Inspectlet suggests that teachers mostly did not report all features they used in the OTM. As shown in Figure 18, for instance, almost all teachers watched instructional videos. There was only one teacher who did not watch a video and she reported having technical issues with videos in her weekly journal and stated that was why she did not watch any of the videos. In addition, almost all teachers downloaded materials from the OTM. Some teachers downloaded the student material only, whereas some downloaded the TM. Teachers’ behavior in relation to downloading the materials varied. For instance, there was only one teacher (Isabelle) who downloaded everything. Cat, Emma, and Olivia specifically downloaded the lesson objectives page of the subject they taught. Casey, who is an experienced pronunciation teacher, downloaded only the student material. Student materials were downloaded by four other teachers (Emma, Iris, Isabelle, and Olivia). From four teachers who downloaded the OTM content, three (Emma, Olivia, and Iris) downloaded only particular subsections of the OTM instead of downloading the entire chapter for the topic they chose to teach. They did not invariably download the OTM for each topic they taught, but only for some. This may suggest that they did not need guidance or the answers for each topic or that they did not find anything new.
The answer key was used by five teachers based on data obtained from Inspectlet. All NNESTs checked the answer keys of some exercises and two NESTs also used the answer keys for certain exercises. Some teachers did not report their use of the answer keys in their weekly journals. This may be because they did not use an answer key for each exercise but only for some. For instance, Casey almost never used an answer key or checked the immediate feedback presented on the student material side. In fact, she is one of those who used the OTM least; however, there was one case that she checked the answers by clicking on one of the options given in the exercise items. In exercise 1 of non-final intonation chapter, listeners were to listen to the intonation of the same word in two cases and decide if those two cases had the same intonation pattern. In this exercise, Casey just clicked on the words to hear their intonation but did not click on ‘S’ for same or ‘D’ for different (see Figure 19). However, in exercise 2 she both clicked on the play button to play the words and clicked on either falling, rising, or fall-rising intonation symbol to see the feedback. This suggested she felt exercise 1 was easier than exercise two since she did not have to worry about making a judgment about the direction of the two
intonation patterns, but just to tell if they were the same or not. Exercise 2 is more complicated since it required identifying the intonation pattern that was used.

Figure 19. Screenshots from Casey's screen recording for exercise 1 & 2

In the weekly journals, teachers were asked if they used the OTM only for preparation purposes or during their teaching in class. All teachers except for Isabelle said they used the OTM only for their class preparation. However, teachers had also access to the online learner’s page (LP). Based on real-time user data obtained from Inspectlet, half of the teachers used the online LP during their teaching. Sometimes they worked on the exercises on the LP and they received automatic feedback for the options in the exercises (see Figure 20). That is, they would not need to go to the OTM to check the answer keys. Online student materials with immediate and automatic feedback may decrease the need for answer keys in TMs.
Figure 20. A teacher's use of the online LP, final intonation - Exercise 5

One of the NNESTs, Isabelle, usually used the OTM, especially for the non-final intonation and word stress chapters. Yet, for the [n], [l], [r] chapter, she reported not using the OTM because she did not find much difference between the student material and the OTM. In fact, there were differences between the student material and the OTM because the OTM had the instructional videos and hover-over definitions of sayings (see Figure 21) in exercise 13. However, the overall guidance and explanations related to the exercises in this chapter was less detailed compared to the other chapters in the OTM, especially suprasegmental chapters. This may have made Isabelle feel like the OTM was more like an answer key, and since she did not have any problems with the answers of the exercises in this chapter, she did not feel the need to use the OTM (Excerpt 3.9).
Excerpt 3.9 (Isabelle, NEST) “I didn’t really use the teacher manual a lot for this lesson because I felt like it did not have a lot more than the student material and also *I did not have problems with the answers to the exercises of this lesson.*”

Three of the teachers using the OTM did not report any technical issues. However, half of the teachers raised concerns about the videos because they either did not load fast enough or not at all. A few teachers also noted that they usually had Internet issues and sometimes the speed of the Internet they had was too slow, and therefore, these teachers could not make use of the videos comfortably. Some said they could watch it at their homes since they had a faster Internet connection there. One of the teachers raised the same issue for the audio feature of the OTM. She said because she had Internet problems, she could not play the words of some exercises in class. Therefore, her biggest suggestion for the improvement of the OTM was to provide downloadable audio just like downloadable PDFs. Another issue for one was that the links in the OTM did not work for her sometimes. This was supported by real-time user data as well since occasionally the OTM did not direct teachers to the page they wanted to go.
There were things that were not reported in teachers’ weekly journals or anticipated in the creation of the OTM, but discovered by screen recordings of teachers’ use of the OTM and the eye-tracking and/or click heatmaps of Inspectlet. For instance, teachers found some words/points of special interest in the student material or OTM. This was shown by teachers’ hovering over words for a while, shown by the eye-tracking and/or click heatmaps of Inspectlet. Inspectlet’s eye-tracking is simply equal to mouse hover-overs. In the example shown in Figure 22, there were two words teachers hovered over more frequently than the other words in the lesson objectives. Those words are “intonation differences” and “elliptical phrases.” One of the NESTs, William, also commented on the role of elliptical phrases in his weekly journal entry and noted that he would have expected to see “more explanation on the role of ellipsis in short sentences.”

![Lesson Objectives](image)

**Figure 22.** Eye-tracking heatmap of final intonation lesson objectives

In another example, a NEST, Cat, was working on sentence focus chapter in the OTM, and while she was looking at exercise 2, which is a dialogue with blanks, she hovered over certain words such as “choir, tenor, and bass.” Mouse hover-overs by teachers in screen recordings also showed how much of the explanation that is available for teachers was really read by teachers. In all the chapters, teachers had to start with the lesson objectives page which included the objectives, rationale, and the outline. In all chapters, the rationale of the chapter was divided into two or three chunks of information (see Figure 23), not to overwhelm the teachers and to use space wisely.
For instance, as shown in Figure 23, tabs of the rationale were the most frequently clicked by all teachers who used the OTM. However, screen recordings of the eight teachers who participated in each step of this research showed that not all teachers paid equal attention to all tabs of the rationale section of chapters. A few teachers did not check the tabs other than the first one when they were looking at the rationale of a chapter. However, lesson objectives took full attention by all teachers.

Another finding based on the screen recordings was that two teachers (Emma and Olivia) followed a cyclical approach with their use of the OTM. That is, they read the lesson objectives and rationale and the explanation parts of each relevant chapter and section, then moved on to the exercises, and then they went back to reading the rationale or the explanation parts.

6.4 Summary of the Findings

The OTM was used by many teachers from different countries, and many of these teachers were not the participants of this study. An important point shown by this fact is that an OTM may be more visible and accessible even without the distribution of its accompanying
textbook. Although many printed TMs are not noticed even by teachers who use the textbook for which the TM was designed, the OTM used in this study took the attention of people who were not necessarily informed about the student material or this study. It shows the power of online materials to be discovered by teachers.

Overall use of the OTM showed that teachers used the manual to work on suprasegmental features, and among them intonation and word stress were the most frequently used ones. This finding is not surprising considering the findings of previous pronunciation research (e.g., Baker, 2011a; Burri, Baker, & Chen, 2017) and the findings of the first research question, because these two most frequently used pronunciation features, especially intonation, are the ones which are named to be challenging to teach for many teachers. Findings suggest that teachers may have used the OTM for the features they find difficult to teach. It is also clear that it is easier to find materials on segmental features both in printed materials and on the Internet; however, this may not be the case for suprasegmentals. For instance, one of the teachers in this study stated that a reason she chose to teach final intonation with the OTM was that she did not have available materials for it. In addition, intonation was the pronunciation feature whose instructional video was watched by most teachers.

Another finding obtained based on the use of the OTM is that teachers mostly used it (1) to download student materials and the OTM content (2) to read the rationale and lesson objectives of the topic they taught, and (3) to work on the first few exercises including the warmup and first three or four exercises. These findings are important in terms of showing that teachers may still want to have a physical copy of their materials. Indeed, student materials were printed more than the OTM content, suggesting that teachers want to have a physical copy for their students. It is not known how this would work if students already had a printed student’s
book accompanied by the OTM. The circumstances of this study may have affected teachers’ desire to download and print. However, one observation to be noted is that not all teachers printed the entire chapters because some printed only certain pages or exercises, which showed they were selective about the materials.

Most teachers read the rationale and the lesson objectives, suggesting that they wanted to learn about why it matters to teach a pronunciation feature. Knowing why a pronunciation feature is important to teach is part of the subject-matter content knowledge of teachers, and teachers’ desire to read this information may show their willingness to learn new information or refresh their knowledge.

As for the eight teachers who taught in this study, seven of them already integrated online materials into their teaching. They liked using online materials mostly because they think online materials (1) support learner autonomy and motivate learners to practice pronunciation outside of the classroom, and (2) give them a chance to see how pronunciation features are presented differently by others in online videos. For some of these teachers, online materials were used as a primary source, for some as supplementary materials, and for some as materials for their teaching in a lab. Teachers who used the online sources as primary materials were the ones who taught by using pronunciation sections in their general English skills books and who did not take pronunciation training, or took pronunciation training many years ago.

One of the teachers who did not usually integrate technology into his teaching did not find technology very helpful for teaching and thought the only thing it did was to present traditional exercises in a different platform. However, this was a teacher who acknowledged the usefulness of the OTM after his experience using it. Knowing that most of the teachers in this study already integrated online materials into their teaching shows their positive attitudes
towards technology. Because teachers mostly liked using online materials, it can be assumed that factors related to teachers’ personal characteristics would not negatively affect their use of an OTM. However, the results showed that teachers sometimes experienced technical problems with video and audio components of the OTM because of the Internet speed issues. This affected some teachers’ experiences negatively and discouraged their use of the OTM because for some, instructional videos were the most attractive feature of the OTM.

The teachers’ use of the OTM showed that they mostly used it to get guidance for their teaching. Surprisingly not many teachers used the OTM to reach the answer keys. These two findings suggest that teachers care more about “what,” “why,” and “how” parts of pronunciation teaching; that is, they were interested in increasing or refreshing their subject-matter content knowledge or pedagogical content knowledge. These findings may even help explain why TMs are not very frequently used by teachers and are perceived as an answer key only. If TMs are perceived to be equal to an answer key, and if an answer key is not what takes teachers’ attention or what teachers need, then looking for a TM may not be so crucial. The OTM was used more by less experienced teachers while some experienced teachers used the OTM very little. This may suggest that less experienced teachers may need more guidance for their teaching practices.

Screen recordings of teachers showed that teachers spent more time on certain words in the explanations or exercises of the OTM. For instance, the word “ellipsis” in the lesson objectives of the intonation chapter and the words “choir” and “tenor” in the word stress chapter were the ones some teachers hovered over for a long while. This may be because they were looking for an additional explanation about those words and thought maybe hovering over would provide a look-up definition or they thought the pronunciation of those certain words may be
challenging because they may not be one of the most frequently used words in teaching settings (i.e., choir).

The overall findings suggest that “guidance” including explanations regarding the rationale and objectives of a lesson may be the most important function of the OTM for teachers, and that less experienced teachers are the ones who used the OTM most often. Also, having access to printed materials is important although teachers liked using online materials. This chapter also shows us that teachers used the OTM more for certain pronunciation features.

Findings also suggest how an OTM could be designed to support teachers better and what kind of novelties and differences it can bring into a TM. Most printed materials have a glossary at the end of them for teachers to check the definition of terms. This function could be achieved by integrating look-up definitions to an OTM so that teachers hover over a word to see its definition without leaving the current page he/she is on. This would both save time for the teacher and create a better user experience. Additionally, an OTM like the one used in this study can track the use of the manual by teachers which may inform both material developers and researchers about what teachers find useful and what they do not, and how they can be supported better. Being able to track teachers’ use also gives a chance for researchers to collect data on use that teachers may not remember. Certain features such as the ones given above may increase the effectiveness of an OTM and provide a better experience for teachers compared to a printed TM.
CHAPTER 7: RESULTS FOR RESEARCH QUESTION 4

The fourth research question is “What are the influences of the OTM on NESTs’ and NNESTs’ cognitions regarding pronunciation teaching?” This question aims to see how using the OTM may have influenced teachers’ cognitions, especially their content knowledge and pedagogical content knowledge of pronunciation, their confidence in pronunciation teaching and teaching practices, and their attitudes towards pronunciation teaching. Research question 4 was answered by qualitative data obtained from teachers’ weekly journals and their final interviews (see Appendix D) following their use of the OTM in their class or tutoring sessions. Questions addressing teachers’ likes and dislikes about the OTM, their expectations of it, its usefulness, suggestions for improving the OTM, and reported changes in their knowledge and confidence suggest how an OTM can influence teachers regarding pronunciation.

Discovering the influences of using an OTM helps identify the important criteria in creating a TM, that is, how to best assist teachers in their pronunciation teaching practices and how a TM’s being online can provide a helpful support system for pronunciation teachers. Data for this research question were collected from the same eight teachers whose data were used to answer research question three. In chapter 6, brief information about these teachers was presented; more detailed information about each teacher and their teaching context are presented in this chapter to better understand any influences of the OTM on these teachers’ cognitions.

7.1 Information about Teachers

Cat (NEST, 27): Cat, from the USA, got her undergraduate degree in Spanish and English literature and her master’s degree in Teaching English as a Second Language (TESL) and linguistics. At the time of the data collection, she had been teaching English for three years (oral communication skills), and she always integrated pronunciation into her teaching. Cat took
an English phonology class during her master’s degree and did pronunciation tutoring sessions while she was taking the phonology course. Additionally, she taught oral communication skills for a year when she was a teaching assistant during her master’s degree. When she was asked how she got into pronunciation teaching, she said she was assigned to teaching oral communication skills and that is partly how she got into pronunciation teaching. However, she added that she liked the fact that students liked pronunciation instruction since they were motivated to speak better, and this motivated her to teach pronunciation. Cat said she had a “really good” phonology teacher and she found her class to be one of the most useful classes she had taken. However, she said this phonology class mostly focused on learning English pronunciation, not on how to teach it. Therefore, she said a lot of her knowledge came from her own teaching experience in class and trying to figure out how to do things. Additionally, she said the focus of the class was mostly on segmental features of English pronunciation. Cat said for her oral communication skills class, she was always handed a syllabus by her department, but she could adapt it based on her learners’ needs. At the time of the data collection, Cat was tutoring a student for pronunciation and she said she focused mostly on teaching segmental features. She added that she had not focused on suprasegmentals recently, and because her phonology class focused more on the segmental features, she felt more confident in teaching segmental features.

Casey (NEST, 52): Casey, from the USA, got her undergraduate degree in foreign language teaching and her master’s degree in Teaching English as a second language. She has been teaching English for more than 20 years. She started teaching pronunciation in graduate school and since then she has taught stand-alone pronunciation courses on and off. Casey’s master’s degree program had a strong pronunciation component because there was an influential
pronunciation professor in her program. Casey had positive experiences about the pronunciation teaching course she took. Additionally, she had study abroad experience in France where she spoke in French and took another phonetics and phonology course. French was also part of her undergraduate education. Her experience in France and in the graduate program led her to focus on pronunciation teaching in her career as she discovered early that she was interested in pronunciation teaching. Casey said she did pronunciation tutoring in her graduate program, and she also observed her pronunciation professor teaching the same topics before she did. For these reasons, Casey felt very prepared and said she knew what to do from the very beginning in her career. She started teaching with her pronunciation professor’s book; she was shown how to teach with that book. Casey also had a chance to teach pronunciation in an environment where she could be supported by her colleagues and to learn from materials created by different colleagues. She rated her knowledge in pronunciation and confidence in pronunciation teaching highly, and she said she never had confidence issues because of her strong background and learning experiences. Unlike many other teachers who were interviewed in this study, Casey had a more balanced approach to prioritizing pronunciation features. She reported covering both segmentals and suprasegmentals since the beginning of her career. During her initial interview, she noted how important both types of features are and that they both should be addressed in a pronunciation class. Casey has a command of pronunciation teaching materials in the market and although she uses a course book (Well Said), she supplements it as needed.

**William (NEST, 47):** William, from the UK, got his undergraduate degree in linguistics, followed by pedagogical qualification training, and his doctoral degree in education. Like Casey, he has been teaching English for more than 20 years and English pronunciation since 2000. William is a teacher trainer and at the same time is involved in the organization committee of a
pronunciation interest group in Europe. William took a pronunciation course during his language education; however, he did not take a course on how to teach pronunciation. Compared to many teachers who were interviewed, William was the one who knows almost all pronunciation materials on the market, and he has been working on developing his own materials. As a teacher who is very aware of pronunciation teaching materials, William does not rely on one book to teach pronunciation, but pulls from different materials instead. He rated his overall knowledge and knowledge in segmental and suprasegmental features above 9 out of 10 and his confidence in teaching those pronunciation features as 10.

**Emma (NEST, 32):** Emma, from Scotland, got her undergraduate degree in Italian and English language teaching and her master’s degree in English language teaching. She also has a DELTA certificate. Emma has been teaching English pronunciation for six years. She never took a pronunciation or pronunciation pedagogy course. She started pronunciation teaching simply because of necessity as she was assigned to teach it at her institution. By the time she started teaching, the course focused mostly on segmental features and she was not given a syllabus. As a teacher who was not trained for pronunciation teaching, she was only provided with a folder that included various pronunciation teaching materials. Emma said she learned how to teach pronunciation as she went along in the course, and because the materials she was given mostly targeted on segmentals, she focused more on these when she first taught pronunciation. In line with her history of pronunciation teaching, Emma rated her knowledge of and confidence in teaching suprasegmental features of pronunciation lower than with her teaching of segmental features. Emma said she struggled about using her own voice for teaching at the beginning since she is a Scottish speaker whereas most of the published teaching materials assume the speech of other dialects of English like General American English or Received Pronunciation. Despite the
difficulties she has had, Emma likes pronunciation teaching; she is involved in a special interest group for pronunciation and attends conferences during which she gets the chance to talk to practitioners and researchers. She recently started developing her own pronunciation teaching materials.

**Jayme (NEST, 47):** Jayme, from the UK, got her undergraduate degree in French and Spanish and got a teaching certificate after several years of work experience in charities and video production. She has been teaching English pronunciation for the last four years. Her interest in pronunciation teaching occurred while she was working on her teaching certificate, when she started to find the phonetic chart easy to use. She took the pronunciation teaching job when she was offered to teach it at her current institution. Jayme, like Emma, was also not sure about what she was doing the first time she taught but as she put it, she learned how to teach it in the profession. Although Jayme took no official pronunciation course, she had a brief session of pronunciation training in her teaching certificate, CELTA. Like Emma, Jayme is very interested in attending conferences and demonstrated her awareness about pronunciation researchers’ work based on the knowledge she gained from workshops and conferences. Although Jayme has been teaching pronunciation only for four years, her first and second interview data indicated that she had her own way of teaching each topic and she sounded sure about the materials she used to teach those topics. She gives the impression of being all ready and set to go.

**Isabelle (NNEST, 30):** Isabelle, from Iran, got her undergraduate and master’s degree in English as a second language and is a PhD student in Applied Linguistics and Technology at a Midwestern university in the USA. She has been teaching English for seven years but it was her first time teaching a stand-alone pronunciation course at the time of data collection. Isabelle took a pronunciation pedagogy course in her PhD program where she also did pronunciation tutoring
before she started teaching her class. She started teaching an oral communication skills class for international teaching assistants because she was interested in teaching speaking skills and she asked to teach. Isabelle was handed a syllabus for the class she taught; however, pronunciation features were not integrated into the syllabus, and the coursebook she was given did not include pronunciation as much as she expected. As a first-time pronunciation teacher, Isabelle integrated pronunciation features into her syllabus as she went along, but she had not decided what features to cover at the beginning of the semester. Isabelle said various materials taken from different pronunciation teaching materials in her pronunciation pedagogy class helped her to find appropriate teaching sources. Because she did not have a coursebook or a separate set of materials for every feature she wanted to teach, she used the three chapters of my materials as her main materials, compared to other teachers who approached my materials more like supplementary materials. Like many other teachers I interviewed, Isabelle rated her knowledge of and confidence in teaching suprasegmental features lower than her teaching of segmental features. She had difficulties in teaching ‘intonation’ specifically since she was not sure what it was or what it included.

**Iris (NNEST, 29):** Iris, from Brazil, got her undergraduate degree in public relations and was taking post-graduate courses related to language teaching at the time of the data collection. She has been teaching English for 11 years. Among the teachers, she is the only one who does not have a language-teaching related degree. However, Iris said she went to private schools for all her degrees and she did her first English tutoring when she was 17 because her English skills were good. Iris also spent six months in Texas as an exchange student when she was in high school. Iris did not take any pronunciation courses and she reported that what she learned about English pronunciation came from the little pronunciation sections in general English skills books
she taught with. Seeing pronunciation sections presented in little boxes made her think that this was an important skill to teach. Unlike many teachers I interviewed, she rated her knowledge of and confidence in teaching segmental features of pronunciation lower than her ability with suprasegmentals. The reason which contributed to this was her not knowing phonetic symbols based on her statements in the initial interview.

**Olivia (NNESST, 51):** Olivia, from Ukraine, got her undergraduate degree in English language and literature. She has been teaching English since 1987 and started teaching English pronunciation because it was a required course in her department and she chose to teach it herself. Following this experience, she took a break for 10 years from teaching pronunciation skills, yet she started to integrate it into the classes she taught once she realized that her students needed help with pronunciation. Olivia took a phonetics and phonology course during the undergraduate degree and she very much liked the professor who taught the course. Since Olivia teaches pronunciation as an integrated skill into her general English skills course, she uses the pronunciation section in her coursebook. Based on her personal input from the initial interview, she mostly focuses on segmental features of pronunciation since she thinks that there are certain sounds which create problems for Ukrainian speakers; she does not cover suprasegmentals much, at least not if they are not covered in her coursebook. In line with her practice, she said that she feels more confident with segmental features. She also said she does not have enough time to cover suprasegmental features at the upper levels since students have other important things to learn such as grammar and vocabulary. From the way she described her teaching approach, it seems Olivia found segmentals to be more crucial features of pronunciation which need to be addressed even with limited time, but suprasegmentals can be skipped if there is not enough time.
Table 19 summarizes the characteristics of teachers who taught with the OTM. There are both experienced and less experienced teachers. Years of teaching may be a misleading characteristic. Two of the experienced teachers in this study, Iris and Olivia, reported they had not taught a stand-alone pronunciation course at all or for long years; therefore, they did not believe they had much experience in teaching pronunciation. Most of the teachers used a stand-alone book to teach pronunciation while three did not. Of these three, two integrated pronunciation into their general English classes and their pronunciation teaching materials were limited to the pronunciation sections in their general English skills coursebooks. One other teacher preferred pulling from different materials to teach. Of the eight teachers, only two did not have pronunciation training and only one did not use online resources for pronunciation teaching.

Table 19. Qualifications of teachers who taught with the OTM

<table>
<thead>
<tr>
<th>Name</th>
<th>Length of pronunciation teaching</th>
<th>Teaching Setting</th>
<th>Took a pronunciation pedagogy course</th>
<th>Use a book for pronunciation teaching</th>
<th>Use online resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat</td>
<td>3 years</td>
<td>ESL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Casey</td>
<td>20+ years</td>
<td>ESL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>William</td>
<td>20+ years</td>
<td>EFL</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Emma</td>
<td>6 years</td>
<td>ESL</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Jayne</td>
<td>4 years</td>
<td>ESL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Isabelle</td>
<td>1 year</td>
<td>ESL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Iris</td>
<td>11 years</td>
<td>EFL</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Olivia</td>
<td>20+ years</td>
<td>EFL</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

7.2 Usefulness of the OTM

The teachers who taught with the materials were asked in their final interview and weekly journal questions how useful they thought the OTM was and what features they liked most.
Teachers’ responses formed three themes: the usefulness of the explanations, the usefulness of the exercises, and the usefulness of the design of the OTM. This study focused on the usefulness of the design features, since this aspect highlights the multimodal presentation of information for teachers. Teachers’ comments regarding explanations and exercises were not analyzed because they would be the same if presented in a printed TM; they were not analyzed since they were about the content of the TM rather than the mode of presentation. Therefore, comments related to these aspects will not be addressed.

To begin, all teachers’ overall perceptions regarding the usefulness of the OTM were very positive. When asked if they would use this material to teach again if it were to have more chapters, they all said they would, even the teacher who preferred printed materials over the online ones (William). A NNEST, Olivia, said it was very useful, underlining the fact that pronunciation has always been the skill she would skip. Another teacher, Emma (NEST) said the OTM was the most flexible and informative material she has ever had and she wished she had had a TM like this when she started teaching English pronunciation. One of the experienced teachers in the study, Casey (NEST), said this OTM would be very useful for teachers who are new to the area or who have not refreshed their knowledge in pronunciation teaching for a while.

The design feature which contributed to teachers’ perceived usefulness of the OTM most was the instructional videos placed in various chapters to explain, for instance, how a sound is produced, possible perception and production exercises, justifications for teaching a pronunciation feature, or how to teach a pronunciation feature. First, teachers said these videos were trustworthy sources for them since they knew who produced them. Teachers expressed their faith in the expertise of the instructor in the videos. Several teachers said they used the videos not only for themselves to refresh knowledge about the topic or learn about it, but to show them in
class to their students. One of these teachers, Cat (NEST), said that not spending time to search for a good video on the Internet in class but having immediate access to the instructional videos in the OTM instead contributed to her credibility as a teacher (Excerpt 4.1).

_Excerpt 4.1 (Cat, NEST):_ “So for like in terms of that it was like a good tool. It made me feel like um because sometimes when I am working with students and I am like oh I really want a video to show them this one thing but I have to go search on YouTube for like five minutes in class. So, you know now it’s like this was like okay it makes me look good as a teacher to have this one source that I can find a video from quickly.”

Having credibility in the eyes of students is important for all teachers and understandably, the accessibility of these instructional videos was helpful in Cat’s having confidence in herself as a teacher. Cat said the videos were quite useful since they provided her with the words she would need to use to explain how certain sounds are produced (Excerpt 4.2). Her expression about how somebody else’s explanation in the video helped her take a break shows that this type of feature of an OTM can decrease the anxiety and stress on teachers when they struggle with explaining a point, and can lead to not avoiding challenging features in their teaching. Although teachers may have content knowledge about a feature, they may still struggle with explanation part regarding “how” that feature is produced successfully. Thus, it may be a learning opportunity for teachers as it may be for the learners.

_Excerpt 4.2 (Cat, NEST):_ “… when I was using the [p] and the [b] sounds, probably. Um I think I was just having a hard time getting the student to like produce the sound that I wanted and so since I hadn’t really had to explain it and try to like model it for a student like most of the time I just if they get close enough in a class I am happy, but this student was you know pretty advanced, so we were trying to like really work on that sound and I just felt like I didn’t have the vocabulary for it um so that’s why I was like, we found that video and it was helpful like because it let me take a break from trying to explain it and have somebody else you know uh or something else explain it. And then I could kind of think while the video was going, like how can I, _what else can I do to help this student understand._”
Excerpt 4.3 (Isabelle, NNEST): “I think I didn’t know um or I couldn’t describe what I knew, like I would say [n], I didn’t know if the middle of my tongue is doing what it is actually [supposed to be] doing. So, the explanations for under the video, they confirmed what I knew and helped me explain them better or would help me explain them better.”

Isabelle’s (Excerpt 4.3) comment about the usefulness of one of the videos is like Cat’s in the sense that it helped her better explain the segmental feature she was dealing with. It is different in the sense that Isabelle had a gap in her content knowledge in addition to the pedagogical content knowledge. She was not quite sure whether what she knew about the production of the [n] sound was correct or not, but it was confirmed by the video. This also shows that an instructional video can be helpful for teachers to double check if what they know is correct and if so what is a good way to explain it. Considering both Cat and Isabelle are newer teachers in pronunciation, these types of videos may be useful for in-service training. These functions of the instructional videos are also discussed by another teacher in this study, Casey, who is much more experienced than Cat and Isabelle (Excerpt 4.4). Casey referred to teachers who do not have an educational background in pronunciation teaching during their training; however, even teachers who took a pronunciation pedagogy course may go through the same difficulties, especially when they are new to the profession and do not have much teaching experience. This is the case with Cat and Isabelle, both of whom took pronunciation pedagogy courses and are interested in pronunciation research.

Excerpt 4.4 (Casey, NEST): “…I see a lot of teachers that aren’t familiar with teaching pronunciation and I think the teacher’s guide would be very helpful for them, um and it’s unique and it has those videos too sometimes, which I think are nice for people who are really like, hmmm how does this work? You know because there are a good amount of teachers who don’t seem to get much background in pronunciation in their training. Or that have come not necessarily with any um ESL masters, but as something else and not really gotten that.”
An important benefit of videos may be showing the physical aspect of pronunciation better, as expressed by William who said “I do think that pronunciation is actually very physical rather than cognitive so it is useful to actually see how things work and I think videos are more useful than just diagrams.” Thus, this may be another reason some teachers preferred showing the videos to their students instead of keeping them to themselves. Olivia (NNEST) emphasized the usefulness of the captions in the instructional videos. However, she thought these would be helpful specifically for learners though it does not mean that every single pronunciation teacher knows what these concepts are. Materials developers should not assume too much about what teachers do know or should know, to be able to address a wide range of teachers who have different educational backgrounds or teaching experiences.

*Excerpt 4.5 (Olivia, NNEST):* “… I loved it because um I think for a learner that was really helpful, because those yellow things touch and do that, and the teacher was speaking and then there was some title, subtitle, the little yellow things appeared. It was really helpful. I loved it.”

The captions for each video were created to help teachers who may struggle with less frequently used pronunciation concepts by teachers. For instance, when the instructor talks about something including a place of articulation term (Figure 24) or when he talks about an articulatory concept which teachers may not visually spell in their minds (see Figure 25), the first time they hear it, it is explained by captions in the video.
Another feature teachers commented on mostly positively was the audio embedded into sounds, words, or sentences so that they could click and play without downloading the audio. Emma was very happy with the audio since she did not have to go into another screen to play it. Like Emma, Isabelle said she liked recordings presented in clickable audios better since she does not like organizing audio files when she downloads them on a digital device. She thinks trying to
organize them in folders takes time for her but she did not need to do that type of extra work due to the OTM.

One thing that was possible due to the embedded audio function was the interactive consonant and vowel charts in the OTM. This was a positive feature that some teachers commented on. Two of the NESTs from the UK (William and Jayme) used the charts in their class, and one of William’s students printed the PDF of the consonant chart and put it on his fridge at home. Jayme and William thought the charts were useful since they could create an awareness of sound and spelling relationships because English does not have a transparent orthography. William stated that since he was teaching English to Russian speakers, whose native language is not written in the Latin alphabet, having a consonant chart with many example words was very helpful. When sounds on these charts are clicked on, a smaller box appears under the chart and provides additional example words that present the sound in the initial, middle, and final positions (Figure 26). Both teachers and students can hear how the words are pronounced by clicking on them. Thus, for each sound in the charts, there are six to nine example words depending on their occurrence in different positions in a word. This may be why Jayme and William liked the example words. Presenting this number of example words for each sound in printed material would not be doable on a single page, and it would not be possible to have people listen to the pronunciation without going to an online dictionary. However, these things are doable on a digital platform such as the one used for the OTM.
None of the teachers was unhappy about the OTM’s being online although there were a few who would normally prefer printed materials, either because that is what they like personally or because they do not trust technology and feel less secure when they rely on technology. However, even teachers with doubts about technology were satisfied with everything being online because downloadable PDFs decreased their anxieties. Some downloaded the materials to be able to annotate them, and some to have a copy of them for future reference. Emma said “…I am the type of person that likes to have the printed book but I can underline, I can highlight it. I can put the corners down to remind myself and I feel safer.” Isabelle was like Emma since she liked annotating her materials. She said it was good to have PDFs instead of a book because she does not like writing on her books; she wants to keep them clean, but with downloadable PDFs
she felt free to write on them since she could print a new copy whenever she wanted. William was another teacher who generally likes printed materials better; he downloaded the PDFs of the chapters he taught (Excerpt 4.6).

*Excerpt 4.6 (William, NEST):* “I did like to download the pdfs because it is nice to have a kind of permanent record and um as I said it is a kind of safe if technology doesn’t work, it’s nice to have that. I also find it personally easier to actually look at written material rather than something on the screen.”

Having the possibility of downloading PDFs may give teachers the freedom they look for without risking their teaching plans. William said he was fine with using online material after his experience with the OTM because he thought the advantages it brought such as the videos and interactive consonant and vowel charts were useful enough to convince him use it. William had said in his first interview that he was not a big fan of technology although he did not think he was a “technophobe” either. However, after teaching with the OTM he was more positive about his potential use of technology. The fact that he likes printed materials was something supported by the PDFs he could download; thus, it was not a feature he had to lose because of using online materials.

The overall design of the OTM was also found to be helpful by teachers because it made it possible to assign homework more easily since there was also an online learner’s page (LP) on which students could get immediate feedback on most of the perception exercises. One of the teachers, Iris, stated that the online design of the TM makes individualized teaching possible because she could assign exercises or chapter sections as homework only for the students who have a problem with those features (Excerpt, 4.7).

*Excerpt 4.7 (Iris, NNEST):* “I thought one feature like two students or three students really needed to study it and all the rest of the group then I would probably assign this as homework. I don’t feel that I should spend, given the course is quite short, I feel that I shouldn’t spend too much time on something for a minority, at the same
time I don’t think that I that it’s okay not to address that just because it is very few people. I think everything that you know I think that everything should be addressed and I would do by sending for homework.”

Some teachers even used the LP with their students while teaching and let them see the immediate feedback in various exercises and question their responses’ correctness so that they could discuss why their response was correct or incorrect. Isabelle found the OTM and its accompanying LP very useful because it provided materials to work on in the lab time of her class. Two other teachers, William and Cat, found the OTM useful because they believed this type of material could encourage their learners’ ‘autonomy’ for their own learning and make pronunciation teaching more in line with current teaching trends. Cat was one of the teachers who used the OTM while she was tutoring her student and as she said (Excerpt 4.8), working with online materials can normalize learners’ searching for things they want to learn more about by themselves and thus became more independent learners. This may eventually be helpful for teachers as well since they may have students questioning and searching more.

*Excerpt 4.8 (Cat, NEST): “I feel like it made it more um like it made it modern. And because there’s a lot of things that you can find online nowadays and I think that motivated students go and look for that um and it’s just natural to google it or Youtube or something. Um so I think that that was helpful. I feel like it brings it into current teaching.”*

Other than the features that were highlighted by teachers, the overall layout of the OTM was found to be very helpful. Teachers liked the fact that they did not have to carry the OTM with them and could have access to it whenever and wherever as long as they had the internet connection. Most teachers thought the OTM was easy to navigate through the fixed table of contents with drop-down menu items on the upper left part of each page and the laid-out menu of each chapter located on the top part of each page (see Figure 27). Teachers thought it was easy to go back and forth between different pages. Having the student material and TM presented next to
each other in expandable and collapsible boxes was one of the design features that many teachers found helpful since they could easily compare the content of the two.

![Image](image.png)

**Figure 27.** Table of Contents in the OTM

Having the explanation and exercise sections in different colors and providing the important notes were also features some teachers found helpful in terms of showing the importance of concepts. For instance, Isabelle said the printed TM, which she downloaded as a PDF, needed more formatting and styling since visually it did not work well with her attention, and she had to read from the beginning to the end to find important points. When this teacher was asked whether she thought the same way about the OTM, she said it was designed well with colors and boxes, so she could tell where the important explanations were easily by looking at the pages. Similarly, Emma said it was easy to find the rationale and justifications of each chapter “with one click” by going to the lesson objectives page.

In general, the impression the OTM created on teachers was positive and they found it useful and agreed that they would consider using it again in the future. In fact, the real-time data obtained from Inspectlet shows that some teachers who participated in this study and other
teachers around the world are still using the OTM, although it is not clear how all teachers had access to it. However, the OTM was not without its problems which limited the usefulness of the features teachers liked to have. For instance, at least half of the teachers said they had issues with loading the videos fast enough at their work place or at their homes. Three of the teachers working in the USA did not report issues about the speed of videos being loaded; however, others did. The same problem occurred with the audio file for some teachers, though not always. These teachers said it would be nice to be able to download the audio files for such cases. What this shows is that teachers who experience technical problems because of Internet speed or access may not trust technology and therefore not fully trust an OTM. And since it is not possible to control how the technological infrastructure works in each teaching setting, it may be wise to provide printable or downloadable copies of the materials.

Another point addressed by Emma was that the expanding accordion boxes on the student material side and the OTM side did not always align perfectly, which annoyed her visually. Such a problem may discourage some teachers from using the OTM. Another teacher, Iris, said she thought the OTM would be more helpful if the PDFs of it were downloaded in a more user-friendly process and open to editing format. She said although she thought the amount of information and exercises were good for the teachers, she did not want to share everything with students when she downloaded the student material on her OTM. What she did in those cases was to convert the PDF files into Microsoft Word documents. These design issues creating potential problems could be taken care of to create a better experience for teachers and motivate them to take advantage of the information presented in multiple modes at a time. However, this may not be something material developers would be willing to do because of copyright issues for their materials.
7.3 Influence of the OTM on Cognitions

In this section, the analysis of teachers’ weekly journal responses as well as their initial and final interview responses is presented to see how using the OTM affected their knowledge of English pronunciation, confidence in teaching pronunciation, and attitudes towards pronunciation teaching. Overall, findings showed that having used the OTM affected teachers’ cognitions quite positively. Most teachers admitted that at least some new information was added to their knowledge or their knowledge of pronunciation was refreshed. Some teachers, including the very experienced ones, said they were never sure of how to present certain pronunciation features and the OTM helped with that. They also reported that they learned new ways of presenting although they mostly could teach it well enough. Refreshing their knowledge of pronunciation was something asserted not only by experienced teachers but even teachers with only one year of experience since some noted that they did not quite remember what they learned about a specific topic in their graduate level course.

In terms of confidence, four teachers said using the OTM accounted for their increased level of confidence in pronunciation teaching. These teachers expressed their trust in the expertise of the material developer partly because of previous familiarity with the person teaching the instructional videos in the OTM. Even for teachers who were not familiar with the person teaching, the knowledge that this person was a content-area expert influenced their trust in the materials. Although not all teachers talked about the change in their confidence level, it can be assumed that increased knowledge in pronunciation teaching due to the experience with the OTM would bring positive results for the confidence of teachers, if they had confidence in the writers of the materials.
Results also indicated that the OTM was influential on some teachers’ attitudes towards pronunciation teaching in a positive way since it made pronunciation seem easier to teach, and had some teachers be more open integrating technology into their teaching. As stated previously, even the teachers who like printed materials more opted for the OTM after their experience with it since they noticed some advantages that could not found in a printed TM. Findings also showed that some teachers anticipated influence of the OTM on teachers’ teaching practices because of the way it presented information.

7.3.1 Influence of the OTM on Teachers’ Knowledge and Confidence

All teachers reported adding new knowledge to their existing knowledge base of pronunciation teaching, whether content knowledge or pedagogical content knowledge. Three teachers, Cat, Isabelle, and Iris, acknowledged learning new content knowledge from the OTM. The similarities of these teachers include their not being very experienced in pronunciation teaching. Cat and Isabelle were the least experienced in the amount of time they spent in pronunciation teaching, and Iris is the one who taught it for about 10 years but never as a stand-alone course. Also, Iris is the only teacher who does not have an English-related degree and who did not take a pronunciation course. She taught English based on the knowledge she learned from general English skills books.

Both Cat and Isabelle said that they had difficulties explaining how certain sounds are produced. For Cat, who is a NEST, it was more of a ‘how to explain’ issue, and for Isabelle, who is a NNEST, it was about not being sure of what she knew regarding the place of articulation of the sound she was trying to teach. Both teachers thought the OTM, especially the instructional videos, helped them teach these sounds better. Isabelle also mentioned in her weekly journal that she learned the position and shape of the mouth regarding the [n], [l], [r] sounds in the OTM. Isabelle had taken her pronunciation pedagogy course a year before her first-time teaching.
experience, but her not being completely sure of how to explain these segmental features indicate that being trained does not necessarily mean teachers do not need further support. Like Isabelle, Cat took a pronunciation pedagogy course and said mostly segmental features were covered in class and she was more confident in teaching those features. However, she also said one of the new things she learned from the OTM was about the place of articulation.

For Cat, the OTM also contributed to her content and pedagogical content knowledge for a suprasegmental feature, non-final intonation. In her initial interview, Cat had already said intonation was not a topic that she felt comfortable with; yet, she still went for intonation (non-final intonation) while using the OTM. The reason that she went for non-final intonation was its being a new thing for her based on her final interview response (Excerpt 4.9). When Cat was asked how the OTM affected her pronunciation teaching she said it could change the way she presents things.

_Excerpt 4.9 (Cat, NEST):_ “I hadn’t really taught that or worked on students with that before. And so I thought that was pretty interesting that and so I just uh, _that was something that was new for me_ and I thought that this student would enjoy it.”

Isabelle noted that she learned more about how to teach word stress from the OTM. Based on her report, she knew what word stress is but she was not sure how present the information about it in a concise way. This was where the OTM was helpful for her (Excerpt 4.10). In her initial interview, which asked questions based on her online survey responses, she had said word stress was an easy feature of pronunciation. However, she noticed she was not very clear about the way she would teach it when she looked at the way it was presented in the OTM. She said she found the four features presented in written and video explanations very clear and she used those key points to teach word stress.
Excerpt 4.10 (Isabelle, NNEST): “…for lessons like word stress when I used it, yeah, I was like, I could talk about word stress myself but I wouldn’t be saying like these four specific features are um characteristics of stress. I would be saying something like more vague probably.”

The third topic Isabelle taught was non-final intonation. She had already said intonation was a challenging topic in her initial interview. She had said intonation was like an “umbrella term” for her and it included almost everything she could not define well. Non-final intonation is the topic that Isabelle spent most time with in the OTM. The reason was partly because she had more time while she was teaching it in the semester, but also she had not taught it before so she did not know what it was and how it could be taught. In contrast, she spent little time in the OTM when she was teaching the [n], [l], [r] sounds because she said there was almost nothing she did not know. After she taught non-final intonation with the help of the OTM, Isabelle said she had some ideas about it now although she still was not so confident in this topic. Clearly, the OTM could contribute to the content and pedagogical content knowledge of Isabelle for all topics she taught but the amount and form of this contribution differed based on each topic.

Excerpt 4.11 (Iris, NNEST): “I mean um the aha moments were rather like they were related to the fact that I knew it but I didn’t know why. And I was like ah, okay, now I know why. I mean it makes sense now.”

Unlike Cat and Isabelle, Iris had not taken a pronunciation pedagogy course and her source of pronunciation learning was general English skills books. As presented in her weekly journal reports and the final interview, she read everything carefully and watched each video in relevant chapters. Iris said working with the OTM helped her knowledge base. Most teachers reported something they learned from the OTM but none had said their perceived knowledge changed much in general. This finding is not surprising for many teachers since they taught only a few weeks with the OTM. Iris was the only teacher who said her knowledge increased a lot
after using teaching with the OTM. Her knowledge, which she rated around six in the online survey would be at least eight now. Iris said she had the knowledge of certain things but she learned justifications of those things when she used the OTM (Excerpt 4.11). One thing she learned from the OTM was how to count syllables in the word stress chapter. From what she said, learning the structure of syllables and how to count them enabled Iris to teach word stress more easily.

_Excerpt 4.12 (Iris, NNEST): “I had to learn about the syllables whole structure because um due to it intuitively I know how to pronounce most words but um I didn’t really know how to pronounce syllables in English because it’s something that, because most Brazilian people who learn English they learn through a course. You know the English we have in high school was, nobody really learns from that.”_

Iris noted that counting syllables in English is challenging for Brazilian Portuguese speakers because the division of syllables is different in those languages. Thus, this creates difficulties in learning word stress, and understandably this may be a difficulty for teachers as well. Yet, having taught with the OTM, Iris said “to be honest, I cannot even remember what I used to think was so difficult, because I mean studying the material made me feel really confident about everything.” In addition, Iris said the OTM helped her be more aware of final intonation and made her more confident in teaching it. Iris’s experience with the OTM was very positive in general, and clearly it was influential in terms of increasing her knowledge of and confidence in pronunciation teaching.

Olivia shared some commonalities with Iris since she mostly integrated pronunciation into her general English courses and used the pronunciation parts from her coursebooks. She took a pronunciation course when she was an undergraduate student but based on her report, she had forgotten. For Olivia, the OTM was a source refreshing her knowledge of English pronunciation as well as a source teaching new types of exercises (Excerpt 4.13). Additionally,
Olivia thought the OTM was influential in increasing her awareness of the importance of suprasegmental features; she said “I think it trains my suprasegmental uh you know, awareness so that’s why I would...there’s more balance now yes.”

Excerpt 4.13 (Olivia, NNEST): “… well first of all I love being a student myself, so I learned a lot. Um I mean I learned to, I got acquainted with new exercises which is knowledge new knowledge. I got, I referred to some of the knowledge I forgot which is also learning. So as a learner I enjoyed it.”

Olivia also stated “it [the OTM] definitely made me more confident.” However, she was different from the other teachers in terms of her beliefs towards being a NNEST because she said although her confidence was increased, a NEST would still be better for an upper-level student who wants to learn more than the other students. Although there is research showing that the language background of teachers does not cause a significant influence on students’ pronunciation learning (Levis, Sonsaat, Link, & Barriuso, 2016), the OTM of Pronunciation for a Purpose (PFP) did not have a section discussing this topic as it was out of its scope. However, taking teachers like Olivia into account, it may be a good idea to include a written explanation or video discussion of topics which can affect beliefs about teachers’ self-efficacy.

The OTM also influenced a very experienced pronunciation teacher’s knowledge. William, who taught consonants, word stress, and intonation, has been teaching pronunciation as a stand-alone course for years and as previously mentioned he claimed to have a great amount of knowledge about pronunciation teaching materials. Having watched the video in the word stress chapter, William said it was presented in a more concise way than he usually does and added that he does not have a consistent way of presenting word stress (Excerpt 4.14). This shows that even teachers with long years of experience and a great knowledge of pronunciation teaching materials may still be looking for better ways to present certain pronunciation features. The existence of the instructional videos was the reason William, who does not usually use online
materials, was more open to the idea of using online materials in the future. Therefore, videos may be used to share effective ways of teaching pronunciation, to refresh teachers’ knowledge, and to train teachers about the topic itself. William added he was influenced by the way syllable division was taught in the OTM, which made him think about it more carefully.

Excerpt 4.14 (William, NEST): “I think it um I tend to introduce word stress in the context of we have been working on reading text. *I don’t really have a consistent style of introducing it. But I think the video presents it in a more succinct way and a more focused way than I would*, generally um, present it. … I mean I think looking at materials gives you ideas for how we would present this point even if it weren’t in your materials.”

Word stress was not the only topic whose presentation affected William’s thinking and led him to question his own teaching methods. He said he taught intonation by relying on long grammatical structures which were not authentic because they would not occur much in spoken language. However, the way final intonation was taught in short utterances in the *PFP* had him consider teaching it in a different way than his usual method.

Excerpt 4.15 (William, NEST): “…yeah I’m um tend to teach intonation in relation to grammar structures which are often kind of clauses, and relatively long units whereas I think it would be quite good to actually present in short sentences or even, even little phrases. I kind of question the whole way I teach intonation because I’m not, it’s a very tricky area, teachers often feel a lot less comfortable teaching intonation than they do on sounds. so I think I think the short sentence way is more authentic. … I am thinking a lot about teaching intonation now yeah. *maybe more top down rather than bottom up and working on shorter sections of language using dialogues more and authentic interaction.*”

According to William’s comments, using this OTM influenced his pedagogical content knowledge, which deals with how to present things, and he found new things to learn from it despite his many years of experience. This may show that although a lot of experienced teachers do not prefer using a TM, there may always be new things they can learn, including new ways of introducing topics.
Emma made similar comments to William’s about the influences of the OTM on her pedagogical content knowledge. While she was teaching sentence focus, she noticed the visual presentation in the OTM – a sentence in which the focused word was written in further up – was a simple but effective way of teaching which she had never thought of before. The main influence of the OTM for her was refreshing her knowledge.

Two of the other teachers, Casey and Jayme, differed from others in terms of their experience with the OTM. These teachers did not report any influences of the OTM on their knowledge or confidence. Jayme said she learned a little more about non-final intonation but that was it. Casey reflected on how this OTM can benefit less experienced teachers or teachers without pronunciation training because it can expand their existing knowledge or refresh what they have forgotten. However, the reason for these two teachers’ not finding anything much useful in the OTM for themselves may be because they did not use it much. Jayme reported that she looked at it for a few minutes every time she used it, and Casey did not use it at all other than the times she wanted to print something out. Casey said she previously worked with the authors of the materials and therefore was familiar with the types of exercises that were used in the materials. Thus, she did not think she needed to consult the explanations.

7.3.2 Influence of the OTM on Teachers’ Attitudes

The use of the OTM was not only influential on teachers’ knowledge and confidence but also on their attitudes towards pronunciation teaching, the integration of technology in teaching, and their reported teaching practices. Although the OTM did not influence most teachers’ attitudes, it did for the ones who were more concerned about using online materials in pronunciation teaching or the ones who thought pronunciation teaching was challenging because they were not trained in it.
First, William preferred printed materials over online ones most of the time. However, using an OTM may have increased his awareness of the benefits online materials and he became more open to using them. When he was asked what motivated him to watch the videos in the OTM, he said “a personal thing is that I have not used a lot of technology in my teaching so I am trying to do that more. it’s a kind of personal development thing.” He also added “I’d say it’s made me more enthusiastic to teach pronunciation especially using yeah proper approaches using technology.” William thought that the use of online materials could make him less teacher-centered since other voices (through audios and videos) come into play. William additionally thought this type of TM may encourage people to consider creating a pronunciation syllabus instead of following an ad-hoc approach to it.

Another teacher whose attitudes towards pronunciation teaching appeared to change was Iris. In her initial interview, she accounted for her not being trained in pronunciation as a factor which negatively affected her confidence in teaching. However, having taught with the OTM, she felt more confident and said she found pronunciation teaching easier compared to the time she did not teach with a TM designed for pronunciation teaching. She noted that she felt ready to teach whatever feature she was focusing on after she read and watched everything available in the OTM. Iris was also very positive about using the online materials instead of printed materials, especially books, which she said she puts on the bookshelf and rarely looks at.

Cat was another teacher who had a very positive attitude towards using online materials even from the beginning because she thought younger people use online materials mostly and they engage better if technology is involved. Like Cat, other teachers (William, Iris, Oksana) said their students liked using the online learner’s page, and students’ motivation encouraged these teachers to search for online materials more frequently for themselves as well. In fact, the
learner’s page was not available as an online source during Sonsaat (2016); however, teachers who participated in it asked for it because they wanted to share similar type of material with their students. Some even approached the OTM as a perfect self-study source. Teachers in this study were not different in that sense. Cat said she could have her advanced learners use the OTM and learn from it. Cat was positive towards the use of technology in pronunciation teaching because she thought it made her teaching look more modern and current.

7.4 Summary of the Findings

Findings for Research Question 4 showed that teachers’ experience with the OTM, although it was only a few weeks, created positive impacts on teachers’ knowledge of, confidence in, and attitudes towards pronunciation teaching and created positive impacts on teachers’ willingness to integrate technology into teaching. All teachers found the OTM useful because of the instructional videos, embedded audio on words and sentences, its design and layout, and other advantages the online format provided. Teachers noted many reasons for finding the instructional videos useful:

- Trustworthy source of information because the person in the video is an expert
- Helpful source for refreshing content knowledge
- Helpful tool in increasing credibility of the teacher for not wasting time to find a good video in class
- Helpful source to see how pronunciation features are taught by others (especially an expert)
- Clear and helpful source because of the captions in them
- Helpful assistant when a teacher is not sure about how to present a pronunciation feature
Helpful source for classroom use

Teachers found the embedded audio useful since they did not need to navigate between different screens to find audio files or since they did not need to organize audio files on their computers. Additionally, the embedded audio function was useful in the interactive consonant and vowel charts where teachers could listen to many example words, including sounds of English in the initial, middle, and final positions of words.

Other layout and design features teachers found useful were the OTM’s ease of navigation, lack of cross-referencing issues because of the side-by-side design of the student material and the TM, direction of teachers’ attention to important things using different colors, font-sizes or content boxes for explanations and exercises, and accessibility, which saved teachers from carrying a book with themselves. Not being able to annotate the OTM content was one of the things which was not appreciated by these teachers who liked printed materials to write on; however, these teachers said they were fine because they could download PDFs.

In line with its perceived usefulness, the OTM was shown to influence teachers’ knowledge of pronunciation teaching although the amount of the influence differed for each teacher. It was most influential for less experienced teachers. Less experienced teachers thought the OTM contributed to their subject-matter content knowledge since some topics were new to them (e.g., non-final intonation) or they were less knowledgeable about them. Additionally, the OTM helped these teachers with how to introduce certain pronunciation features. It not only contributed to less experienced teachers’ presentation skills but also to those of experienced teachers because there were teachers who said they had never thought of presenting certain pronunciation features in the way they were presented in the OTM. Although the OTM was influential on all teachers’ knowledge of English pronunciation since it contributed to their
subject-matter content knowledge or pedagogical content knowledge, only one teacher said the OTM led to an increased in their perceived knowledge of English pronunciation features. However, this was not unexpected since teachers used the OTM only for a few weeks and because these were all experienced pronunciation teachers.

The OTM was also influential on some teachers’ confidence in pronunciation teaching and their attitudes towards pronunciation teaching and integrating technology into their teaching. Some teachers said pronunciation would be a skill to skip without support such as that provided by the OTM. Because of the support the OTM provided, some teachers said pronunciation teaching seemed easier than it did before. Additionally, it changed some teachers’ negative feelings about integration of technology into teaching to positive feelings. These positive changes in teachers’ attitudes were because of the advantages they would not want to lose by using a manual in printed format. These advantages included the instructional videos and embedded audio files.

The findings indicate that materials developers should not assume what teachers know or do not know in pronunciation teaching. As shown in this chapter, even experienced teachers may still learn about more concise ways of introducing a pronunciation skill. It also shows that although they are not “new” teachers, a certain topic may be new for them. Additionally, experienced teachers may need to refresh their knowledge since it may have been years for them since they taught a certain feature. As for teachers who just took a pronunciation course, they may have forgotten what they learned or they may not yet have had the chance to use what they learned yet. Because of all these reasons, material developers should consider including sufficient explanations about what a target pronunciation feature entails or how it can be taught. Additionally, considering teachers like Iris, who never got a degree in a language-related major,
the explanations must be clear, possibly including definition of terms. There are many ways an OTM can be helpful for all types of teachers and to contribute to their knowledge and confidence in pronunciation teaching. The ways that an OTM can be designed to help a wide range of teachers will be described in the next section, following the discussion of all research questions so far.
CHAPTER 8 – DISCUSSION AND CONCLUSIONS

8.1 Overview of the Findings

This study investigated how native and non-native English-speaking teachers’ cognitions about pronunciation teaching and pronunciation teaching materials were explored through how teachers used an OTM and whether their cognitions were influenced by their experience with the OTM. Gaining insight into teachers’ cognitions related to pronunciation teaching and pronunciation teaching materials was crucial to understanding how teachers made use of teaching materials, the OTM in this study, and what the features of an OTM can be used in the future to support teachers in pronunciation teaching.

Findings of the first research question regarding TCs about pronunciation teaching showed that teachers’ subject-matter content knowledge and pedagogical content knowledge were important in their willingness to teach pronunciation and their decision-making processes as to what pronunciation features to prioritize. Although most teachers, both NESTs and NNESTs, rated their knowledge of and confidence in pronunciation teaching highly, they named several difficulties in pronunciation teaching related to lack of subject-matter and pedagogical content knowledge.

In line with TC research (Couper, 2016b), teachers who were not highly confident in teaching certain features of pronunciation; preferred not to address those features in teaching unless they came up in class. Similar to the findings of Burns (2006), most teachers were less certain about teaching suprasegmental features. Specifically, intonation was named to be challenging by most teachers regardless of teachers’ language backgrounds, educational backgrounds, and experience with pronunciation teaching. Among these three factors, experience was the most influential on teachers’ confidence since the more experienced teachers who said
intonation was challenging to teach were less nervous about teaching it compared to less experienced teachers. However, even experience may not help the confidence of all teachers. There were still teachers who were not confident about teaching pronunciation despite their teaching experience, which was the case in other studies (Baker, 2011a).

The findings of this study, like other research, indicate that teachers’ confidence in teaching pronunciation, and perhaps any skill, comes from a combination of different factors such as training and experience. Some teachers in this study were trained and had tutoring and observation experience; however, some lacked pedagogical content knowledge and struggled with explaining, for instance, how to produce a certain sound or a prosodic feature. Teachers, especially NESTs, relied on their students’ mimicking skills and hoped they would be able to imitate the way sounds were produced. They hoped for listening input to do the work. Leaving the work for pronunciation improvement to listening input is not a new thing (Krashen, 1982) but input without instruction does not always lead to improvement (Huckin & Olsen, 1984; Wong, 1986). Besides, in a pronunciation class, leaving the work merely to input and not helping students with clear instruction does not improve a teacher’s teaching skills and may in students’ eyes decrease the credibility of a teacher.

Previous research shows teachers mostly focus on segmental features on pronunciation features and believe working on the problem-causing sounds would help most with pronunciation issues (Breitkreutz, Derwing, & Rossiter, 2001; Burns, 2006). This was not fully supported by the findings of this study because it was mostly inexperienced teachers who focused primarily on the segmental features of pronunciation. The reason for inexperienced teachers’ focus on segmental features of pronunciation was because most of their training was in segmental features, the fact that textbooks focus on segmental features more than
suprasegmentals, and that segmental features are perceived as easier to begin with or easier to understand.

The findings of the second research question showed that most teachers used a textbook while teaching pronunciation. The ways teachers used the textbooks differed based on experience, as less experienced teachers stated they relied on their textbooks for teaching. Some experienced teachers said this reliance on textbooks reflected their first few times of teaching pronunciation. This finding corroborates with previous research (Gray, 2010; Shawer, 2010). Shawer’s (2010) classification of teachers based on their use of curriculum materials proposes three types of teachers: curriculum-transmitters (who strictly rely on teaching materials they have), curriculum-developers (who adapt and supplement teaching materials), and curriculum-makers (who create their own materials).

The interviews showed the existence of all of Shawer’s types of teachers, and as proposed by Shawer, they fell on the continuum based on their experience in pronunciation teaching. One NNEST, who had taught pronunciation only once, was strongly in favor of a single book because she did not trust her skills to combine materials from different sources, whereas one of the most experienced teachers, Chloe, was strictly against the use of one single book, which she called a “scatter gun approach.” The sharp difference between these two teachers reflected a general tendency, with experienced teachers approaching teaching materials as resources whereas less experienced teachers approached them as scripts (Tomlinson, 2012). Teachers’ use of course materials like a script rather than a resource may cause teaching materials’ to be more influential on teaching priorities (Couper, 2016a), which was supported by this study’s findings as well since some teachers said they went with what they had in their textbook and would not address a pronunciation feature unless it was in their textbook. It is not
that teachers should stick with one set of teaching materials for any language skill; the single textbook approach should not be discouraged since using a single textbook may be more comfortable for a new teacher. Some experienced teachers in this study stated that they learned certain pronunciation features from the textbooks they used, especially teachers who were not trained in any of the pronunciation features. Thus any teaching materials or TMs should be written to reflect an educative role, a recommendation reflected in other research as well (Collopy, 2003; Grossman & Thompson, 2008).

The findings of the third and fourth research questions come from the experience of eight teachers who taught with the OTM and its student materials. As seen in Figure 28, most teachers had been trained in pronunciation teaching, and thus the findings reflect a relatively expert group of teachers. As for experience, three teachers (Casey, William, Jayme) were very experienced in pronunciation teaching since they had been teaching English pronunciation for years as both a stand-alone course and as an integrated skill. Two teachers (Cat, Isabelle) were novice teachers since their experience of teaching English pronunciation was one and three years. Two other teachers were in an in-between category because they reported teaching pronunciation for more than 10 years, but their pronunciation teaching was more like integrating it into the class whenever it showed up in the general skills books. These teachers did not teach a stand-alone pronunciation course. One teacher (Emma) had more practical experience than the inexperienced two teachers in terms of teaching pronunciation as a stand-alone course; however, she had not taken a pronunciation course.
According to the findings of research question 3, teachers who used the OTM most were the ones with the least amount of experience in years (Isabelle) and the least amount of experience in practice (Olivia and Iris). Other research has demonstrated that experience is not equal to expertise, and teachers with many years of experience may have less subject-matter and pedagogical content knowledge than novice teachers (Gatbonton, 2008; Tsui, 2003). Thus, Olivia and Iris used the OTM often since they found it useful; Iris learned new knowledge as a person who was not explicitly taught about pronunciation; and Olivia refreshed her knowledge since she had taken her pronunciation course years ago. Among these teachers, Isabelle, with one year of pronunciation teaching experience, was the one who most strictly used the student material and the OTM. She said she did not have available materials for intonation, for instance, and she was happy to be given materials. It was also her personal style to read and annotate everything carefully.
The findings indicate that intonation and word stress were among the most frequently taught topics, and these topics were the ones teachers named to be challenging in research question 1. This paradoxical finding suggests that teachers are willing to try challenging topics when the materials are accessible and provide the background knowledge to make the topics more comfortable. One of the features of the OTM that teachers used most was printable PDFs. Almost all teachers printed the content of the student and teacher’s material. Research shows that people may still prefer printed books when they are given a chance to choose between printed and an e-book (Tosun, 2014). This finding cannot be unproven with the findings of this study, but none of the teachers said they would prefer only printed materials. They liked using the OTM but also appreciated the chance to have a printed copy. Some wanted to keep a printed copy because they did not trust technology fully, and some wanted to be able to annotate information.

Teacher-related factors like (Robinson & Mackey, 2006; Tour, 2015) attitudes towards technology, technological confidence (Li, 2014), personal use of technology (Wozney et al., 2006), and beliefs about the usefulness of technology in teaching (Chen 2008; Li, 2008) may affect their integration of technology into their teaching. For instance, Robinson and Mackey (2006) proposed that older teachers may be less confident about using technology, making them less willing to use it. In this study, Casey, Jayme, and William were the oldest and most experienced teachers. However, the only teacher who was reserved about the use of technology at the beginning of the study was William. His resistance to technology was both related to his age, since he defined himself as being old-school, but also because of his beliefs that technology did not bring any significant benefits to teaching. However, his beliefs changed at the end of the study because of his positive experience with the OTM and some of the advantages of the OTM he liked most (i.e., instructional videos). Thus, this study supports the findings of Inan and
Lowther (2010) who proposed that teachers’ perception of the usefulness of technology may positively affect their use of technology in their teaching.

One of the other older teachers, Jayme, was also working for a video production company, so she was engaged in using technology in her personal life which affected her use of technology positively (Wozney et al., 2006). However, this teacher was one of those who did not use the OTM much. She was mostly interested in the instructional videos; however, she could not watch those most of the time because of Internet speed. This may be a reason that limited the importance of the OTM for her. It has been shown that contextual factors such as technological infrastructure and Internet access affect teachers’ use of technology (Becta, 2004). In this study, Jayme was one of two teachers who was negatively affected by Internet speed issues.

Findings of research question 3 also showed that technology can be used not only by teachers but also by materials developers. The real-time data tracking program used in this study, Inspectlet, enabled a clear view of how and how often teachers used the OTM. This was a helpful addition to this study because there was often a difference between teachers’ verbal reports in weekly journals and information obtained from Inspectlet. The discrepancy between teachers’ behaviors and their verbal reports is discussed in TC research (Phipps & Borg, 2009), and it is why researchers suggest observing teachers in action while they are teaching. Such a thing would not be possible in this study because the interest was on teachers’ use of the OTM at their own time and not on their teaching. However, in cases like this a program like Inspectlet may function as a kind of observation of how they used the materials.

Teachers’ verbal reports and Inspectlet data confirmed that one of the most frequently used parts of each chapter in the OTM was the first page of each chapter where teachers read about the rationale and lesson objectives. Surprisingly, teachers did not check the answer keys of
the exercises as often as they read the rationale of the chapter. What this suggests is the OTM was used for its guidance more than for its answer key.

The findings of the last research question showed that using the OTM was a positive experience for most of the teachers; however, the ones who found it most useful were the ones who were less experienced. However, the OTM contributed to the subject-matter and pedagogical content knowledge of all teachers who used it. For experienced teachers, the contribution of the OTM was mostly to pedagogical content knowledge since these teachers had their own ways of teaching. However, some of these teachers stated that they learned a more concise way of presenting a pronunciation feature. Additionally, the OTM was influential on teachers’ desire to learn new things, especially the topics they had not taught before (i.e., non-final intonation). Another influence of the OTM was increasing the confidence of less experienced teachers. These teachers explicitly stated that their confidence in teaching pronunciation increased and they found pronunciation teaching easier. But this ease did not change one of the teacher’s (Olivia) opinion about the superiority of a NEST in teaching pronunciation. Research also shows that some NNESTs may not take themselves as the best model to teach pronunciation because of their non-native English accent although they are willing to support the use of different English varieties and English as a Lingua Franca approach (Bernat, 2008).

8.2 Lessons from this study

This study was helpful in noticing the unfulfilled potential of TMs. TMs have been mostly perceived as an answer key and are underutilized by teachers. TMs are not the favorite supplementary material to invest in for publishers. This may be because of the perceived answer key function of the TMs because as shown in the findings of this study, what teachers mostly
expect from a TM is guidance in relation to what a pronunciation feature entails and how it is taught. (Answer keys to exercises today are frequently found in the student material as well.) However, as shown in this study, all teachers need and take advantage of guidance regardless of their language background, educational background, and teaching experience.

In this study, there were teachers who were not sure about what certain pronunciation features were although they had been teaching English pronunciation for more than 20 years. There were also NESTs who could hear a mispronounced sound but who did not know what words to use to explain that mispronunciation. And there were experienced and knowledgeable teachers who said they had never thought about introducing a pronunciation feature in the way it was introduced in one of the instructional videos of the OTM. There were also teachers who said they learned more about another English variety (North American English) because they had been teaching a different variety for years (Received Pronunciation). Based on these findings, a few suggestions should be noted both for researchers and material developers:

- Although it is ideal to have teachers with pronunciation and second language acquisition training to teach pronunciation (Derwing, 2008, 2013), it is not always the case, as with one of the participants in this study. Iris had not had formal pronunciation training nor even any language-related degree. The fact that there are many pronunciation teachers who are not trained to teach it means that an effectively designed TM can help meet the needs of such teachers.

- Teachers with pronunciation training may not have had the chance to teach pronunciation for a long time or may not teach certain pronunciation features unless they have to; therefore, they may forget what they know as was the case for some teachers in this study. An
effectively designed TM must recognize that even experienced teachers may need their knowledge refreshed, or that ways of teaching can be beneficial for such a group.

- Teachers who just got their pronunciation training may not have had the chance to put their knowledge into practice yet and still be confused about certain pronunciation features. A good TM must be able to connect to what they have already learned and show teachers how it can be put into practice.

- Being a NEST may give a teacher the chance to hear mispronunciations easily but it does not necessarily help with how to explain them. A TM must also be written to address the particular needs of NNESTs, providing support for pedagogical content knowledge and also reflecting NNESTs’ sometimes hidden discomforts with teaching pronunciation.

- Teachers may bring all kinds of insecurities or uncomfortable feelings into teaching and these may not only stem from being a NNEST but also because of being a NEST speaking a variety of English which is not used in most of the teaching materials. Additionally, insecurities may also exist because of a lack of training in pronunciation. An effective TM should address issues with teaching pronunciation that reflect those teachers who do not speak the variety reflected in the student materials. It may be important to address issues related to differences between varieties in a way that helps all teachers understand how their own varieties can be related to classroom practice.

- Not all teachers are as well informed about the available materials in pronunciation teaching as was the case in this study. This may be because they continue to teach with the book they were taught with a long time ago and are not interested in discovering new materials since pronunciation is not their main area of expertise. There is a high chance teachers who are not very familiar with available teaching materials will notice if there is a TM accompanying a
book. The use of online TMs, and especially TMs that are integrated with student materials, will be able to provide strong support for such teachers. With the greater movement toward the use of electronic materials, the use of TMs may become more influential for developing TCs rather than less.

- Many teachers have recently began using online materials as their primary source of outsider information. Reaching more teachers may be easier by making use of technology not only in student materials but also teacher materials. Additionally, as shown in this study, teachers want to have access to online materials that they can trust since they are not very willing to spend their time looking to and see what is reliable on the Internet unless they have time. An online TM may be the first step in providing these kinds of materials related to particular books, but an online TM may also allow for continually updated links to highly relevant supplemental materials.

What has been listed so far is enough to justify the need for TM support for any teacher regardless of the language and educational background and teaching experience. This study also shows that there are many advantages that an OTM can bring compared to a printed TM. First, it can reach more teachers because there is a higher chance for online materials to be noticed and fulfill the role of teacher support. As stated previously, even teachers who did not know about this research managed to find the OTM and used it, as shown by Inspectlet data. This shows the power of online materials in reaching teachers. Additionally, an effective OTM can make many teachers who do not typically use a printed TM check the TM because of teachers’ strong preference for online materials. Even experienced teachers learned something new from the OTM in this study, but teachers would not know if there is something interesting in a TM if they
do not have the chance to look at it. An effectively designed OTM is likely to serve as more than an answer key.

This study also showed that using an OTM may not only be helpful for teachers but also for materials designers. Inspectlet made it possible to watch teachers’ use of the OTM individually which provided a picture of how they interacted with the exercises before their teaching or whether they made use of the immediate feedback provided for the exercises in student materials side of the OTM. For instance, there was one time that I could see a NNEST’s having trouble counting the syllables of a word in the word stress chapter since she put the word into different columns in a drag and drop exercise in which she was supposed to count the syllables. At another time, I saw a NNEST playing only one word (plodded) among all the others in an exercise. That word, used for a pronunciation point in the word stress lesson, was not one of the most frequently used words in English, and the repeated playing told me that the teacher may have especially wanted to learn the pronunciation of that word. As shown in this study, there is enough evidence that both NESTs and NNESTs are ready to welcome an OTM that is more accessible and practical.

Additionally, since there are in principle no space limits in an OTM, greater amounts of guidance can be given. Also, guidance can be presented not only in written form but also audio-visual form. Teachers may be provided with instructional videos on how to teach a particular pronunciation feature. Using different mediums of delivery may contribute to the improvement of teachers’ knowledge base. Even trained and experienced teachers may benefit from instructional videos as they may want to see someone else explaining or teaching a pronunciation feature in a different way than they do.
In an online TM, design issues such as cross-referencing can be taken care of by providing links within a page or among pages, thus matching the content of the student’s material and teacher’s manual. There may be other benefits (i.e., practicality, accessibility) of creating an OTM as suggested by the participants of this study. Therefore, an OTM may be more helpful in supporting pronunciation teachers’ needs compared to a PTM. The fact that most people have access to a mobile device shows that an OTM would be available anywhere and anytime, making an OTM particularly attractive as a resource.

8.3 Implications for Teacher’s Manual Developers

There are many things a TM and especially an OTM can achieve; however, there are many things to pay attention to for the development of a useful (O)TM in pronunciation teaching. The first two implications are for all material developers who would consider developing a printed or online TM. The remaining implications are for developers who are interested in investing time and effort into an OTM.

- **Encouragement for teaching both segmental and suprasegmental features:** This study showed that most of the inexperienced teachers tended to teach mostly segmental features of pronunciation and ignore the suprasegmental features. Given the documented importance of suprasegmentals for comprehensibility (e.g., Derwing, Munro & Wiebe, 1998), teachers should be encouraged to teach not only segmental but also suprasegmental features. This can be done in an introductory chapter where research findings are presented about how each group of features impact intelligibility in English. Teachers should also be provided with brief explanations on what each pronunciation feature entails and how it is taught. This could be achieved both in written explanations which can be downloaded as a PDF and/or in short instructional videos.
• **Clarifying teaching priorities:** Findings of the second research question showed that teaching materials may influence what teachers teach or in what order they teach. Therefore, the organization of the book should be explained carefully and information provided about why each feature is important to teach in the TM. It should be explained how pronunciation features are sequenced in the book and why it has the order it does. A TM should also provide alternative ways of using the materials so that teachers see options that fit their own classrooms. Teachers should be encouraged to teach the topics their learners need help with and go in the order of topics that would work best for them. Additionally, if a book focuses on only one group of pronunciation features, teachers should be reminded that well-rounded pronunciation teaching encompasses both segmental and suprasegmental features. Other resources may be suggested as to where to find reliable materials for pronunciation features that are not included in the book.

• **Providing glossary for pronunciation terms and look-up definitions:** Findings of this study showed that some teachers do not know certain pronunciation terms. This either leads to their avoidance of teaching anything that would include using these terms, or decreases their confidence. Additionally, one of the teachers in this study mentioned she was always confused because of different terms used by different pronunciation scholars. A glossary would help for these cases. Glossaries are usually presented as a separate section in which teachers find terms in an alphabetized order; however, a search function can be added to an OTM which would make finding terms easily. An OTM can also make look-up definitions possible. Look-up definitions can be designed to show up only when a teacher hovers over a word. This was a function used in the OTM for the explanation of sayings in the [n], [l], [r] chapter.
Providing instructional videos for teachers and students: Instructional videos were one of the most used features of the OTM. Explaining pronunciation concepts in a video format may for some teachers be more helpful than written explanations because they get to see the physical aspect of what is happening. Additionally, seeing how pronunciation is presented by another person, especially an expert, may give ideas about how to teach a pronunciation feature. Captions can be added to the instructional videos in an OTM, and these captions may be used to mark important points or to explain the terms that are used in the video. Instructional videos may be influential on NNESTs’ self-perception as pronunciation teachers; therefore, having a NNEST teaching a pronunciation feature would also be useful. According to the feedback from teachers in Sonsaat (2016), videos must be made more visible by not only locating them in the relevant teaching units, but also on a separate ‘videos’ page. Some teachers in this study preferred showing the instructional videos to their students and they especially liked the videos because they could share them with their students, even when they are their learning at home. This shows that videos for students may be a good addition to an OTM; however, these videos should introduce the pronunciation features in a clear way for them to be understood by students. Pedagogical suggestions may be kept for the instruction videos for teachers.

Providing downloadable materials: When the delivery and presentation method of a TM is online, it is a must to provide downloadable materials for people who like printed materials more because of contextual or personal reasons. Downloadable content from the OTM in PDF format was the most important thing for teachers who wanted to have a printed copy. Additionally, providing PowerPoint presentations that introduce a pronunciation feature or including flashcards that have the pronunciation terms and important points may be helpful.
If PowerPoint presentations are developed for teachers, their language must be clear and easy to understand with notes explaining less-frequently used terms. Providing PowerPoints and flashcards is not a new idea in teaching materials. Some introductory linguistics book have provided them for teachers who also come at the subject from a wide range of expertise (e.g., Fromkin, Rodman, & Hyams, 2013).

- **Embedding annotation tools:** One of the reasons for some teachers’ preference for printed materials is annotation. Teachers may want to highlight or underline what they find important, which is not possible in an OTM. In this study, this was mentioned by a few teachers as the reason for downloading materials. Therefore, material developers may consider embedding online annotation tools into an OTM.

- **Providing an interactive phonetic chart:** An interactive phonetic chart is one innovation that was important for the OTM in this study. The interactive chart may save teachers’ time from going to an online dictionary to listen to the words with a sound they want to teach or practice themselves. Additionally, as addressed by two teachers in this study, an interactive phonetic chart may help with seeing the relationship between sounds and spelling. One thing that material developers should be careful about is with what set of symbols they choose to include in the chart. The interactive chart in the OTM that was used in this study had a few different symbols from the standard IPA chart, and some teachers preferred not to use it so that their students would not get confused. Another possibility of an interactive phonetic chart is that different English varieties can be presented by linking the chart to other charts with those varieties. Since space is not an issue on an OTM, developers may consider including different English varieties.
• **Embedding audio:** An OTM can have audio embedded into sound symbols, words, or sentences. This would save teachers’ from going to a different screen to find the audio of exercises. However, as shown in this study, embedded audio may not work if there are Internet speed or connectivity issues. Although having access to the Internet is not a substantial issue in many places in the world, some teachers thought it would still be helpful to allow teachers to download the audio material for the times they may not have good access to it.

• **Creating a helpful design:** The design and layout of an OTM is important for user-friendliness. One thing the teachers liked in the OTM they used was that they could see the student material and TM side by side. This helped with cross-referencing. In addition to this design, the important content of an OTM can be marked up with different colors, font sizes, or families, or colored borders. This helps to visually organize material.

• **Providing a tutorial:** One way of increasing teachers’ experience with an OTM is to create a tutorial showing how to use the manual. Such a tutorial may highlight the features teachers may need most.

• **Suggesting and providing links to additional resources:** Some teachers in this study mentioned it was not easy to trust everything found online. An OTM can help teachers by providing links to trustworthy sources where teachers can find more examples or exercises.

• **Collecting data about teachers’ use of the TM:** As shown in this study, using an OTM gives developers and publishers a chance to see how teachers use the TM through use of a real-time data tracking program. This can enable material developers to collect data from teachers to improve the quality of an OTM. Material developers may also encourage teachers to send feedback about their use of the OTM by placing an online feedback form in the OTM.
8.4 Limitations of the Study and Future Directions

This study is not without its limitations, which need to be acknowledged for future studies. First, the number of participants in chapter six and seven (N=8) was not large compared to the number targeted at the beginning of the study. The fact that the data collection process of this study was longer than an average research study may have discouraged some teachers from participating. Because of the small number of participants, comparisons between NESTs and NNESTs were not really possible beyond descriptive comparisons. However, it was a strength to have teachers from different teaching contexts. Almost all TC research has collected its data from an intact group of teachers, mostly pre-service teachers taking a graduate level pronunciation course. The design of this study had more advantages in terms of providing a picture about what happens in both EFL and ESL settings, but this advantage would be increased with a larger number of participants.

Another limitation of the study is, again because of the number of participants, that there were not enough teachers representing differences in experience, training, or language background. For instance, there was no teacher who was both untrained and inexperienced in pronunciation teaching. Therefore, the findings in relation to these groups of teachers provide preliminary suggestive findings which need to be supported by a follow-up study with a more controlled group of participants.

In this study, teachers used the OTM for only two or three weeks; a future study in which teachers use the OTM for a semester may be more informative in terms of exploring the potential benefits of an OTM. Additionally, future researchers may consider comparing two groups of teachers, using a printed TM and OTM, to see the advantages only an OTM can bring.
This study shows that a TM is supposed to be more than an answer key and, if it is so, there is a high chance teachers will use it. However, to learn what really helps teachers, we need more research looking at how teachers use TMs for pronunciation teaching, both printed and online. There are few evaluation checklists or sections of textbook evaluation checklists that are devoted to the evaluation of TMs (Cunningsworth, 1995; Hemsley, 1997; Skierso, 1991); however, no research has investigated TMs specifically produced for pronunciation teaching. Therefore, a future study exploring the important criteria for a TM designed for pronunciation teaching would be helpful in terms of developing an evaluation checklist.

8.6 Conclusions

Although it is hard to make strong conclusions about the influence of an OTM on teachers’ cognitions, this study suggests that the use of the OTM in this study led to promising results. At the very least, it shows that all kinds of teachers, including NESTs and NNESTs, inexperienced and experienced, and trained and untrained teachers may benefit from the information presented in a multimodal format in the OTM. This study shows that an OTM in which teachers find some features that they liked and appreciated (i.e. instructional videos, clickable audio) can begin to change the attitudes of teachers towards the use of technology in teaching. Additionally, these features are promising for decreasing the tension of teaching for NESTs and NNESTs at the moments that teachers do not know how to explain a pronunciation feature. This was the case for one of the NESTs who was happy to take a break from thinking how to explain the production of a sound when she discovered that it was explained in a video.

The OTM brings flexibility into teachers’ materials preferences. The fact that they could download and print the content to keep a permanent copy or that they can access it from anywhere anytime with a digital device gives them the chance to act according to their personal
preferences. As long as Internet access is available, the OTM was a more accessible source than a PTM.

OTMs can increase the visibility of TMs as it was shown in this study, and with the multimodal guidance it provides, teachers may ask for TMs from publishers. Additionally, not making physical copies of a TM can decrease the cost on the publisher’s side, which may motivate them to produce better OTMs. Besides, publishers can keep improving their materials based on user data and teacher feedback they can collect.

This study shows that a TM is not limited to being an answer key. A TM designed in an online platform is instead especially promising for making contributions to teachers’ cognitions, including their knowledge and attitudes, and therefore positively affect their confidence as a pronunciation teacher. It is my hope that this study makes the role of TMs more prominent, and both teachers and material developers see the potential benefits of using new types of features in the design of OTMs.
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APPENDIX A - SURVEY FOR NESTS AND NNESTS

1. Are you 18 years of age or older?
2. Have you every taught a stand-alone pronunciation class or a speaking/oral communication skills class in which pronunciation has been taught as an integrated skill? (Choose whichever works best)
   a. I taught pronunciation as a stand-alone course
   b. I taught pronunciation as a part of speaking skills
   c. I taught pronunciation both as a stand-alone course and as a part of speaking skills
   d. I taught speaking/oral communication skills but did not integrate pronunciation
   e. I did NOT teach speaking/oral communication skills or pronunciation at all
3. What languages do you speak other than English?
   a. German
   b. French
   c. Spanish
   d. Chinese
   e. Japanese
   f. Korean
   g. Arabic
   h. Other
4. Rate your spoken language ability in each of the languages you speak. (Slider; 0= Poor – 10= native-like)
5. Age
6. Gender
7. Academic Degree (Check all that apply)
   a. BA (What is your major field? (TESL, ELT, ELIT)
   b. MA (What is your major field? (TESL, ELT, ELIT)
   c. PhD (What is your major field? (TESL, ELT, ELIT)
   d. MA student (What is your major field? (TESL, ELT, ELIT)
   e. PhD student (What is your major field? (TESL, ELT, ELIT)
   f. CELTA (What is your major field? (TESL, ELT, ELIT)
   g. DELTA (What is your major field? (TESL, ELT, ELIT)
   h. Other (What is your major field? (TESL, ELT, ELIT)
8. How long have you been teaching English?
   a. 1-3 years
   b. 4-6 years
   c. 7-10 years
   d. 11 years or more
9. In what settings have you taught English so far?
   a. EFL (English as a foreign language)
   b. ESL (English as a second language)
   c. Both
10. How long have you been teaching oral communication skills or pronunciation?
    a. 1-3 years
    b. 4-6 years
    c. 7-10 years
11. Have you taken a class on pronunciation during your own foreign language studies or English language studies?
   a. Yes
   b. No

12. Have you taken a class on HOW TO TEACH English pronunciation during your BA, MA, or PhD studies?
   a. Yes
   b. No

13. How much do you like teaching English pronunciation? (Slider)
   0 = not at all – 10 extremely much

14. How easy is it to teach English pronunciation for you?
   0 = not easy at all – 10 extremely easy

15. What makes pronunciation teaching easy and challenging for you? (Text box)
   a. Easy:
   b. Challenging:

16. How do you rate your overall knowledge of English pronunciation? (Slider)
   0 = not knowledgeable at all – 10 extremely knowledgeable

17. How do you rate your overall knowledge of segmental features (vowels, consonants) in English? (Slider)
   0 = not knowledgeable at all – 10 extremely knowledgeable

18. How do you rate your overall knowledge of suprasegmental features (word stress, intonation, prominence, rhythm, thought groups etc.) in English? (Slider)
   0 = not knowledgeable at all – 10 extremely knowledgeable

19. How do you rate your overall confidence in teaching English pronunciation? (Slider)
   0 = not knowledgeable at all – 10 extremely knowledgeable

20. How do you rate your confidence in teaching of segmental features in English (vowels, consonants)? (Slider)
   0 = not knowledgeable at all – 10 extremely knowledgeable

21. How do you rate your confidence in teaching of suprasegmental features in English (word stress, intonation, prominence, rhythm, thought groups etc.)? (Slider)
   0 = not knowledgeable at all – 10 extremely knowledgeable

22. Please rank the following pronunciation features based on how easy they are for you to teach
   (Click and drag each item to move)
   1 = Easiest to teach  8 = most difficult to teach

   a. Vowels
   b. Consonants
   c. Word stress
23. When you taught a pronunciation class, did you use a textbook developed particularly for pronunciation?
   a. Yes
   b. No

24. (If no) What is the reason you did not use a stand-alone pronunciation book to teach pronunciation? (Text box)

25. Please name a book you have used recently (If you do not remember the name of the book, please provide any information you remember about it. For instance, the author or the color of the book cover)

26. (If yes) By whom was the book chosen? (Check all that apply)
   a. By me
   b. By the course coordinator
   c. Assigned by department/institution

27. (If by me) How did you decide to use that particular book? (Check all that apply)
   a. Based on my personal research among the other pronunciation books
   b. Based on another instructor’s recommendation
   c. Based on the advertisement of the book by its publication house
   d. Based on my experience with the book in my undergraduate or graduate studies

28. How do you rate your satisfaction with the book? (Slider)
0 = not satisfied at all 10 = extremely satisfied

29. Please tell a couple of things you liked about the book. (Text box)

30. Please tell a couple of things you disliked about the book. (Text box)

31. Is the book accompanied by a teacher’s book (teacher’s manual/teacher’s guide)?
   a. Yes
   b. No

32. How do you rate your satisfaction with the teacher’s book? (Slider)
0 = not satisfied at all 10 = extremely satisfied

33. Please tell a couple of things you liked about the teacher’s book. (Text box)

34. Please tell a couple of things you disliked about the teacher’s book. (Text box)

35. What are some sources you use to teach pronunciation? Please explain why and how you use them briefly?

36. How often do you use the followings to prepare for your pronunciation class or to teach pronunciation? (Likert Scale: Never, rarely, sometimes, often, very often)
   a. Online dictionaries
   b. Printed dictionaries
   c. Text-to-speech programs
   d. Automated Speech Recognition
   e. Speech analyzers (i.e. PRAAT)
   f. Mobile applications
g. Software program

37. If you use a dictionary, what do you use it for?
   a. to check the meaning of a word
   b. to listen to the pronunciation of a word
   c. to check how a word is written in phonetic symbols
   d. to learn the stress pattern of a word (primary stressed syllable etc.)

38. Rate how important each of the following features is for a teacher’s book. (Likert Scale: not important at all, not so important, important, very important, extremely important)
   a. Comprehensibility to all teachers from more experienced to less experienced
   b. Suitability for native and non-native speaker teachers
   c. Clarity and explicitness of the underlying approach of the book
   d. Enough detailed information on the language items to be taught
   e. Enough guidance on the teaching procedures
   f. Prescriptive guidance for the teachers
   g. Clear objectives for each unit/lesson
   h. Intelligible explanation of new language items in terms of their form and meaning use
   i. Outline plans for each unit/lesson
   j. Clear explanation of teaching procedures
   k. Prediction or learning difficulties of learners and advice on those difficulties
   l. Enough cultural explanation when necessary
   m. Easy matching of the contents between the teacher’s book and the textbook
   n. Advice given on informal monitoring of students
   o. Advice on using correction techniques
   p. Keys to exercises and other activities
   q. Regular progress tests
   r. Advice on how to assess students’ improvement
   s. Positively contributing to the student’s motivation to improve pronunciation
   t. Encouragement of the teachers to note down their own ideas in the teacher’s book
   u. Guidelines for evaluating how well lessons went

39. Rate how important each of the following features for you considering the usefulness of a teacher’s book that is developed primarily to teach pronunciation? (Likert Scale: not important at all, not so important, important, very important, extremely important)
   a. Providing a glossary showing the words in phonetic symbols
   b. Providing the pronunciation of each word in audio format
   c. Providing the pronunciation of important words in audio format (such as the ones in the example sentence or in the exercises)
   d. Providing the definition of less frequently used words
   e. Providing various pronunciation of each word in the case that there is more than one pronunciation in different accents of English
   f. Providing various pronunciation of the words which are commonly known to be pronounced differently in different accents of English (i.e. dimension –organization)
   g. Providing brief information on the differences of varieties of English used in the book

40. What are some other important things you would expect from a teacher’s book designed for teaching pronunciation? (Text box)

41. Could you please write a nickname for yourself that can be used to refer to the findings obtained from you? (This is to keep your identity confidential)

42. Would you be interested in being contacted for a follow-up interview?

43. Would you be interested in trying out to teach pronunciation with printed materials that are accompanied by an online teacher’s manual?
SURVEY for NNESTs

1. Are you 18 years of age or older?
2. Have you every taught a stand-alone pronunciation class or a speaking/oral communication skills class in which pronunciation has been taught as an integrated skill? (Choose whichever works best)
   a. I taught pronunciation as a stand-alone course
   b. I taught pronunciation as a part of speaking skills
   c. I taught pronunciation both as a stand-alone course and as a part of speaking skills
   d. I taught speaking/oral communication skills but did not integrate pronunciation
   e. I did NOT teach speaking/oral communication skills or pronunciation at all
3. What is your native language? (Text box)
4. What other languages do you speak other than English?
   a. German
   b. French
   c. Spanish
   d. Chinese
   e. Japanese
   f. Korean
   g. Arabic
   h. Other
5. Rate your spoken language ability in each of the languages you speak. (Slider; 0= Poor – 10= native-like)
6. Age
7. Gender
8. Have you ever lived in a country where English is the dominant language?
   a. Yes (where?)
   b. No
9. How long have you lived in the country where English is the dominant language?
   a. Less than a month
   b. 1-3 months
   c. 3-6 months
   d. 7-12 months
   e. More than a year
10. Academic Degree (Check all that apply)
   a. BA (What is your major field? (TESL, ELT, ELIT)
   b. MA (What is your major field? (TESL, ELT, ELIT)
   c. PhD (What is your major field? (TESL, ELT, ELIT)
   d. MA student (What is your major field? (TESL, ELT, ELIT)
   e. PhD student (What is your major field? (TESL, ELT, ELIT)
   f. CELTA (What is your major field? (TESL, ELT, ELIT)
   g. DELTA (What is your major field? (TESL, ELT, ELIT)
   h. Other (What is your major field? (TESL, ELT, ELIT)
11. Have you received any of your degrees in a country where English is the dominant language or are you currently pursuing a degree in a country where English is the dominant language?
   a. Yes
   b. No

12. (If yes to Q11) Which of your degrees have you received in a country where English is the dominant language? (Check all that apply)
   a. BA (Name the country please)
   b. MA (Name the country please)
   c. PhD (Name the country please)
   d. Pursuing my MA degree in an English-speaking country right now (Name the country please)
   e. Pursuing my PhD degree in an English-speaking country right now (Name the country please)
   f. Other (i.e. CELTA, DELTA) (Name the country please)

13. How long have you been teaching English?
   a. 1-3 years
   b. 4-6 years
   c. 7-10 years
   d. 11 years or more

14. In what settings have you taught English so far?
   a. EFL (English as a foreign language)
   b. ESL (English as a second language)
   c. Both

15. How long have you been teaching oral communication skills or pronunciation?
   a. 1-3 years
   b. 4-6 years
   c. 7-10 years
   d. 11 years or more

16. Have you taken a class on pronunciation during your own foreign language studies or English language studies?
   a. Yes
   b. No

17. Have you taken a class on HOW TO TEACH English pronunciation during your BA, MA, or PhD studies?
   a. Yes
   b. No

18. How much do you like teaching English pronunciation? (Slider)
    0 = not at all – 10 extremely much

19. How easy is it to teach English pronunciation for you?
    0 = not easy at all – 10 extremely easy

20. What makes pronunciation teaching easy or challenging for you? (Text box)
    a. Easy:
    b. Challenging:

21. How do you rate your overall knowledge of English pronunciation? (Slider)
    0 = not knowledgeable at all – 10 extremely knowledgeable
22. How do you rate your overall knowledge of segmental features (vowels, consonants) in English? (Slider) 0 = not knowledgeable at all – 10 extremely knowledgeable

23. How do you rate your overall knowledge of suprasegmental features (word stress, intonation, prominence, rhythm, thought groups etc.) in English? (Slider) 0 = not knowledgeable at all – 10 extremely knowledgeable

24. How do you rate your overall confidence in teaching English pronunciation? (Slider) 0 = not knowledgeable at all – 10 extremely knowledgeable

25. How do you rate your confidence in teaching segmental features in English (vowels, consonants)? (Slider) 0 = not knowledgeable at all – 10 extremely knowledgeable

26. How do you rate your confidence in teaching suprasegmental features in English (word stress, intonation, prominence, rhythm, thought groups etc.)? (Slider) 0 = not knowledgeable at all – 10 extremely knowledgeable

27. Please rank the following pronunciation features based on how easy they are for you to teach (Click and drag each item to move)  1= Easiest to teach  8 = most difficult to teach
   a. Vowels
   b. Consonants
   c. Word stress
   d. Intonation
   e. Prominence
   f. Thought groups
   g. Rhythm
   h. Connected speech

28. When you taught a pronunciation class, did you use a textbook developed particularly for pronunciation?  
   a. Yes
   b. No

29. (If no) What is the reason you did not use a stand-alone pronunciation book to teach pronunciation? (Text box)

30. Please name a book you have used recently (If you do not remember the name of the book, please provide any information you remember about it. For instance, the author or the color of the book cover)

31. (If yes) By whom was the book chosen? (Check all that apply)  
   a. By me
   b. By the course coordinator
   c. Assigned by department/institution
32. (If by me) How did you decide to use that particular book? (Check all that apply)
   a. Based on my personal research among the other pronunciation books
   b. Based on another instructor’s recommendation
   c. Based on the advertisement of the book by its publication house
   d. Based on my experience with the book in my undergraduate or graduate studies
33. How do you rate your satisfaction with the book? (Slider)
   0 = not satisfied at all       10 = extremely satisfied
34. Please tell a couple of things you liked about the book. (Text box)
35. Please tell a couple of things you disliked about the book. (Text box)
36. Is the book accompanied by a teacher’s book (teacher’s manual/ teacher’s guide)
   a. Yes
   b. No
37. How do you rate your satisfaction with the teacher’s book? (Slider)
   0 = not satisfied at all       10 = extremely satisfied
38. Please tell a couple of things you liked about the teacher’s book. (Text box)
39. Please tell a couple of things you disliked about the teacher’s book. (Text box)
40. What are some sources you use to teach pronunciation? Please explain why and how you use them briefly?
41. How often do you use the followings to prepare for your pronunciation class or to teach pronunciation? (Likert Scale: Never, rarely, sometimes, often, very often)
   a. Online dictionaries
   b. Printed dictionaries
   c. Text-to-speech programs
   d. Automated Speech Recognition
   e. Speech analyzers (i.e. PRAAT)
   f. Mobile applications
   g. Software program
42. If you use a dictionary, what do you use it for?
   a. to check the meaning of a word
   b. to listen to the pronunciation of a word
   c. to check how a word is written in phonetic symbols
   d. to learn the stress pattern of a word (primary stressed syllable etc.)
43. Rate how important each of the following features is for a teacher’s book. (Likert Scale: not important at all, not so important, important, very important, extremely important)
   a. Comprehensibility to all teachers from more experienced to less experienced
   b. Suitability for native and non-native speaker teachers
   c. Clarity and explicitness of the underlying approach of the book
   d. Enough detailed information on the language items to be taught
   e. Enough guidance on the teaching procedures
   f. Prescriptive guidance for the teachers
   g. Clear objectives for each unit/lesson
   h. Intelligible explanation of new language items in terms of their form and meaning use
   i. Outline plans for each unit/lesson
   j. Clear explanation of teaching procedures
   k. Prediction or learning difficulties of learners and advice on those difficulties
l. Enough cultural explanation when necessary
m. Easy matching of the contents between the teacher’s book and the textbook
n. Advice given on informal monitoring of students
o. Advice on using correction techniques
p. Keys to exercises and other activities
q. Regular progress tests
r. Advice on how to assess students’ improvement
s. Positively contributing to the student’s motivation to improve pronunciation
t. Encouragement of the teachers to note down their own ideas in the teacher’s book
u. Guidelines for evaluating how well lessons went

44. Rate how important each of the following features for you considering the usefulness of a teacher’s book that is developed primarily to teach pronunciation? (Likert Scale: not important at all, not so important, important, very important, extremely important)
   a. Providing a glossary showing the words in phonetic symbols
   b. Providing the pronunciation of each word in audio format
   c. Providing the pronunciation of important words in audio format (such as the ones in the example sentence or in the exercises)
   d. Providing the definition of less frequently used words
   e. Providing various pronunciation of each word in the case that there is more than one pronunciation in different accents of English
   f. Providing various pronunciation of the words which are commonly known to be pronounced differently in different accents of English (i.e. dimension–organization)
   g. Providing brief information on the differences of varieties of English used in the book

45. What are some other important things you would expect from a teacher’s book designed for teaching pronunciation? (Text box)

46. Could you please write a nickname for yourself that can be used to refer to the findings obtained from you? (This is to keep your identity confidential)

47. Would you be interested in being contacted for a follow-up interview?

48. Would you be interested in trying out to teach pronunciation with printed materials that are accompanied by an online teacher’s manual?
APPENDIX B - INTERVIEW I QUESTIONS (POST-SURVEY)

1. Where are you from? Where do you live now?
2. What is your educational background?
3. How long have you been teaching English?
4. Have you taught English pronunciation as a stand-alone course or as an integrated part of another class such as oral communication skills?
5. How long have you been teaching pronunciation?
6. How did you start teaching pronunciation?
   a. Was it what you wanted to teach or you had to start teaching it since you were assigned to do so?
   b. Was your dissertation/thesis topic on a pronunciation-related issue?
7. Have you taken a class on pronunciation or how to teach pronunciation during your own foreign language studies or English language studies?
   a. Yes: Could you please talk about your class experience?
   b. No: How did you train yourself to teach pronunciation?
      i. Conferences
      ii. Workshops
      iii. Resource books
8. Do you think pronunciation teaching is boring or fun? Why?
9. How much do you like pronunciation teaching?
10. What features of pronunciation do you think it is important to teach?
    a. Segmentals
    b. Suprasegmentals
11. What features do you mostly cover in your own teaching?
    a. Is there a feature you don’t teach much although you think it’s an important pronunciation feature?
12. You rated your overall knowledge of English pronunciation ______ in the survey:
    a. (If very rated high) Is it because you were trained very well in pronunciation teaching or you trained yourself by teaching it for a long time?
    b. Knowledge in teaching segmental features
c. Knowledge in teaching suprasegmental features

13. You rated your overall confidence in teaching English pronunciation _____ in the survey:
   a. (If lower or higher than the overall knowledge): Why is your confidence lower/higher compared to your overall knowledge?
   b. What increases/decreases your confidence in teaching English pronunciation in general or for specific pronunciation features?
   c. Your confidence in teaching ____________ features is lower than your confidence in teaching ____________ features. Why so?

14. Do you think pronunciation teaching is challenging for you?
   a. If so, what makes pronunciation-teaching difficult/easy for you?
   b. (For senior researchers and practitioners): Was pronunciation teaching challenging for you when you taught it for the first time?
   c. (For senior researchers and practitioners): What do you think is challenging in pronunciation teaching for your teacher trainees?

15. Do you think teaching pronunciation is easier or more difficult than teaching other skills?

16. What would help you overcome the possible difficulties you have while teaching pronunciation?

17. What student books have you used to teach pronunciation so far?
   a. Have you usually chosen the books yourself?
   b. How did you decide what book(s) or materials to use when you taught pronunciation for the first time?

18. What did the book(s) you use last time or so far usually cover?
   a. Segmental features
   b. Suprasegmental features
   c. If it (they) doesn’t cover some of the features, do you supplement the book with other materials?

19. How did you like the book(s)?
   a. Did you think it was sufficient and well-rounded to teach English pronunciation?

20. Did the book have a TM?

21. Was the TM supportive enough for you to teach?
a. What did you use it for?
b. What kind of information did you expect to find in it?
c. What kinds of outside sources did you have to use to complement something in the book or when you were getting prepared to teach?
d. If you had the chance, what would you change/add/remove in the teacher’s manual of the book you used?

22. If I asked you to tell me what a TM means to you, what would you say?
   a. What is your overall experience with TMs?

23. Do you think there needs to be a teacher’s guide for every book?

24. How does a TM affect teaching practices of teachers?
   a. Beginner
   b. More experienced

25. If you have not used a book to teach pronunciation, what materials have you used?

26. Is there any online or printed source that is your favorite for pronunciation teaching?

27. Do you have a library of materials you have created for yourself?
   a. If not, what are you planning to use next time when you teach pronunciation?

28. How does the book(s) you use influence the topics you teach in class?
   a. Do you choose the book based on what you want to teach or do you choose the book first and then decide what to teach? How does that process work for you?

29. Do you ever use resource books (e.g. Celce-Murcia 2010 et al.) to teach yourself about how to introduce/teach certain pronunciation features?)
   b. If not, where do you usually seek for more information/help on how to introduce a pronunciation feature?

30. Do you usually create your own materials or adapt from others?
APPENDIX C - INTERVIEW II – MATERIALS EVALUATION INTERVIEW

1. What was your overall impression of the TM?
2. Did it provide you enough support you expected?
   a. Do you think you had the same amount and type of support in each topic you taught with the TM?
3. What were the things you liked about the teacher’s manual?
   a. What feature(s) of the teacher’s manual did you find inevitably useful, if any?
4. What were the things you did not find helpful in the TM?
   a. Was there anything you wished to have in it, for instance?
   b. Was there anything you found unnecessary, unclear or overwhelming?
5. How did you like the explanation sections in the teacher’s manual?
   a. Did you find the explanations clear enough for you to teach?
   b. Has there been anything on which you needed more explanation?
6. How did you like the exercises in the teacher’s manual?
   a. Was there any type of exercise that you liked a lot?
   b. Was there any type of exercise you did not like at all?
7. Did you use any TM components only for class preparation or while you were teaching in class as well?
   a. If you used the TM in the class, what did you use it for?
8. What features of the TM helped you most while you were preparing to teach?
9. Which topics did you teach by using the TM?
   a. Topic 1:
   b. Topic 2:
   c. Topic 3:
10. Why did you choose to teach those ones?
11. Which topic did you enjoy teaching most with the TM? Why?
12. If you were given access only to one topic in the TM, which one would it be?
13. Were there any other topics you wished to have in the student materials and the TM? Why?
14. How do you think the TM influenced your attitude towards pronunciation teaching?
15. In the online survey and/or in the post survey interview you stated that your knowledge in English pronunciation features was ____________, do you think the TM created any changes in your overall pronunciation knowledge or knowledge about segmental or suprasegmental features?

16. Do you think the TM gave you new ideas about pronunciation teaching methods?

17. In the online survey and/or in the post survey interview you stated that your confidence in teaching English pronunciation was ____________, do you think the TM created any changes in your overall pronunciation teaching or in teaching segmental or suprasegmental features?

18. Based on your teaching experience with the TM, how do you think a TM may affect a teacher’s teaching practices?

19. If you were asked again to use these materials to teach pronunciation, would you say yes or no?
   a. Why yes/no?

20. What are your suggestions for me to improve the teacher’s manual?
APPENDIX D - WEEKLY JOURNAL PROMPTS FOR TEACHERS

Name*: Date:

*Please write down the nickname you used in the survey and the interviews.

1. What feature(s) of pronunciation did you teach by using the materials this week?

2. Approximately how much time did you spend using the materials to teach?

3. Approximately how much time have you spent using the teacher’s manual?

4. For what purposes did you use the teacher’s manual?

5. Did you use the TM mostly when you were getting prepared to teach or also when you were teaching in class? If you used the TM in the classroom, what did you use it for?

6. Did you use supplementary outside materials? If so what are those, and why did you need to use them?

7. Was there anything you wanted you find in the teacher’s manual but it was not there?

8. Was there a feature of the teacher’s manual that you liked a lot?

9. Was there a feature of the teacher’s manual that you disliked a lot?

10. Is there anything new you learned from the TM this week? Or did you refresh your knowledge on something by using the TM?

11. Did you have any technical issues while using the manual?
APPENDIX E - CODE BOOK FOR INTERVIEW I

Post-Survey Interview and Open-Ended Survey Questions

<table>
<thead>
<tr>
<th>KNOWLEDGE</th>
<th>Short Descriptor</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedagogical content knowledge</td>
<td>K1</td>
<td>This is related to “how to teach” the content, being able to explain with clear examples etc. If a teacher talks about ‘how to teach’ pronunciation, this is about his/her pedagogical content knowledge (Shulman, 1986).</td>
<td></td>
</tr>
<tr>
<td>Lack of pedagogical content knowledge</td>
<td>K2</td>
<td>This code is used if a teacher explicitly says or implies that he/she does not know ‘how to teach’ a topic.</td>
<td></td>
</tr>
<tr>
<td>Subject-matter content knowledge</td>
<td>K3</td>
<td>This is related to a teacher’s knowing the subject-matter that he/she teaches. For instance, for a pronunciation teacher, this would be knowing what pronunciation features are and how they work (segmentals and suprasegmentals) For instance, teachers need to know phonetics and phonology to be able to teach pronunciation. Subject-matter knowledge of a pronunciation teacher also includes knowing why different pronunciation features are important and how they are related to each other or how they fit in together.</td>
<td></td>
</tr>
<tr>
<td>Lack of subject-matter content knowledge</td>
<td>K4</td>
<td>This code is used if a teacher explicitly says or implies that he/she does not know what a pronunciation feature is or what it contains. For instance, if a teacher does not know what ‘intonation’ is as a pronunciation feature, he/she lack subject-matter content knowledge. Additionally, if a teacher says he/she does not know why intonation is important to teach, this would also show lack of subject-matter content knowledge.</td>
<td></td>
</tr>
<tr>
<td>Influence of teacher training or phonetics - phonology (pronunciation) course</td>
<td>K5</td>
<td>This code is used if a teacher says that he/she learned something during his/her teacher training (BA, MA, PhD or CELTA/DELTA etc.). that is how he/she knows about it. Or it could be the opposite, a teacher may say “I don’t know this particular pronunciation feature well because we did not cover this much in our phonetics and phonology class/ pronunciation class.” Both cases indicate the influence of teacher training.</td>
<td></td>
</tr>
<tr>
<td>Influence of teaching observation (apprenticeship)</td>
<td>K6</td>
<td>This code is used if a teacher says that he/she learned something by observing his/her mentor/professor/collleague.</td>
<td></td>
</tr>
<tr>
<td>Influence of personal training/development</td>
<td>K7</td>
<td>This is related to the knowledge a teacher gained by personal learning efforts such as attending conferences and workshops and reading research or resource books. If a teacher says, “I know X topic well now because I did a lot of reading on this”, this would be personal training.</td>
<td></td>
</tr>
<tr>
<td>Influence of previous tutoring and teaching experience</td>
<td>K8</td>
<td>This is related to the knowledge a teacher gained through tutoring in a graduate level class or any other type of teaching experience.</td>
<td></td>
</tr>
<tr>
<td>Practical Knowledge</td>
<td>K9</td>
<td>Practical knowledge is related to “the knowledge that is directly related to action, that is readily accessible and applicable to coping with real-life situations, and is largely derived from teachers’ own classroom experience” (Calderhead, 1988)</td>
<td></td>
</tr>
<tr>
<td>Lack of Practical Knowledge</td>
<td>K10</td>
<td>This code is used if a teacher explicitly says or implies that he/she does not have practical knowledge in pronunciation teaching. (see K9 for definition of practical knowledge)</td>
<td></td>
</tr>
</tbody>
</table>

**CONFIDENCE**

<table>
<thead>
<tr>
<th>Short Descriptor</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confident</td>
<td>C0</td>
<td>This code is used if a teacher says that he/she has confidence in pronunciation teaching but not necessarily expresses by why he/she has (high) confidence.</td>
</tr>
<tr>
<td>Not Confident</td>
<td>C1</td>
<td>This code is used if a teacher says that he/she does NOT have the confidence in pronunciation teaching but not necessarily expresses by why he/she does NOT have confidence.</td>
</tr>
<tr>
<td>Confident because of background knowledge</td>
<td>C2</td>
<td>This code is used if a teacher says he/she is confident because of having a (strong) background in pronunciation or in a pronunciation feature. Some teachers may say for instance “I’m confident with segmentals because of my</td>
</tr>
</tbody>
</table>
background in speech pathology, but I’m not confident in suprasegmentals at all”

<table>
<thead>
<tr>
<th>Reason for teaching pronunciation</th>
<th>TR1</th>
<th>This code is used when a teacher explains how and why he/she started teaching pronunciation or oral communication skills. It may be because of their personal interest or they were the only person to teach it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenges of pronunciation teaching</td>
<td>TC1</td>
<td>This code is used if a teacher says pronunciation teaching is difficult/challenging, but he/she does not provide a reason about why. If you know the reason, use one of the following codes.</td>
</tr>
<tr>
<td>• Lack of content/pedagogical knowledge/confidence in a specific topic</td>
<td>TC2</td>
<td>This code is used if a teacher says pronunciation teaching is difficult/challenging because he/she does not have sufficient knowledge or confidence in pronunciation or in a particular feature of pronunciation.</td>
</tr>
<tr>
<td>• Lack of appropriate materials</td>
<td>TC3</td>
<td>This code is used if a teacher says pronunciation teaching is difficult/challenging because there is not appropriate materials for his/her context or students. It could be because of first language or their proficiency levels.</td>
</tr>
<tr>
<td>• Language background</td>
<td>TC4</td>
<td>If a teacher says pronunciation teaching is difficult/challenging because he/she is a nonnative English speaker and cannot produce some pronunciation features or he/she is a regional speaker (Scottish) and therefore doesn’t know how to teach based on another dialect.</td>
</tr>
<tr>
<td>• Students from different L1s</td>
<td>TC5</td>
<td>This code is used if a teacher says pronunciation teaching is challenging because it’s hard to plan teaching according to students coming from different first language backgrounds.</td>
</tr>
<tr>
<td>• Students at different proficiency levels</td>
<td>TC6</td>
<td>This code is used if a teacher says pronunciation teaching is challenging because it’s hard to plan teaching according to students coming from different proficiency levels.</td>
</tr>
<tr>
<td>• Lack of training</td>
<td>TC61</td>
<td>This code is used if a teacher says pronunciation teaching is challenging because of not having training in phonetics/phonology or pronunciation.</td>
</tr>
<tr>
<td>• Lack of practical knowledge</td>
<td>TC62</td>
<td>This code is used if a teacher says pronunciation teaching is challenging because of not having practical knowledge which means: “the knowledge that is directly related to action, that is readily accessible and applicable to coping with real-life situations, and is largely derived from teachers’ own classroom experience” (Calderhead, 1988)</td>
</tr>
<tr>
<td>Teaching priorities</td>
<td>TP7</td>
<td>This code is used when a teacher names the pronunciation features that seem most important to him her or what features he/she usually covers in class.</td>
</tr>
<tr>
<td>• Focus on segmentals</td>
<td>TP8</td>
<td>This code is used if a teacher says he/she covers mostly segmentals in class or if the focus is on segmentals in a book or teacher training program.</td>
</tr>
<tr>
<td>• Focus on suprasegmentals</td>
<td>TP9</td>
<td>This code is used if a teacher says he/she covers mostly suprasegmentals in class or if the focus is on suprasegmentals in a book or teacher training program.</td>
</tr>
<tr>
<td>• Focus on both segmentals and suprasegmentals</td>
<td>TP10</td>
<td>This code is used if a teacher says he/she covers both features of pronunciation based on learner needs or because of some other reason.</td>
</tr>
<tr>
<td>Most challenging to teach</td>
<td>T11</td>
<td>This code is used to tag the feature(s) a teacher finds most challenging to teach. Add the name of the feature after the code. Example: T11/intonation</td>
</tr>
<tr>
<td>Easier to teach</td>
<td>T12</td>
<td>This code is used to tag the feature(s) a teacher finds easy(ier) to teach. Add the name of the feature after the code. Example: T12/word stress</td>
</tr>
</tbody>
</table>
### MATERIALS

<table>
<thead>
<tr>
<th>Short Descriptor</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book</td>
<td>MB1</td>
<td>This code is used whenever a new book is mentioned in a transcript. Write the name of the book next to the code. (MB1: Clear Speech)</td>
</tr>
<tr>
<td>- Likes about the book</td>
<td>MB3</td>
<td>This code is used if a teacher says what he/she liked about a book.</td>
</tr>
<tr>
<td>- Dislikes about the book</td>
<td>MB4</td>
<td>This code is used if a teacher says what he/she disliked about a book.</td>
</tr>
<tr>
<td>Online materials</td>
<td>M3</td>
<td>This code is used whenever a teacher talks about using online materials. Add the name of the online material after the code. (i.e. M3: Google; M3: YouTube; M3: Online dictionaries; M3: Videos)</td>
</tr>
<tr>
<td>Dependence on materials</td>
<td>M4</td>
<td>This code is used if a teacher says he/she relies on a textbook/class material heavily or he/she did so when he/she first taught pronunciation or when he/she did not know how to deal with a topic well. So, if they say “I don’t really know how to teach intonation, so I stick with the textbook”, this is the code that needs to be used.</td>
</tr>
<tr>
<td>Influence of materials</td>
<td>M5</td>
<td>This code is used if there is an indication that the textbook or course material affects a teacher’s decisions or way of doing things. For instance, if a teacher uses the course book as the structure/syllabus of the course or follows the teaching sequence of the book. Also use this code when a teacher says having the materials gives the feeling of security or confidence.</td>
</tr>
<tr>
<td>Influence of experience in using materials</td>
<td>M6</td>
<td>This code is used if a teacher says he/she uses teaching materials differently compared to his/her first years of teaching because of the experience he/she gained.</td>
</tr>
<tr>
<td>Books/Materials as a reference/guidebook</td>
<td>M7</td>
<td>This code is used if a teacher says he/she uses the materials to find out something or learn about something.</td>
</tr>
<tr>
<td>Materials library Yes</td>
<td>M8</td>
<td>This code is used if a teacher’s response to “do you have a materials library?” is yes.</td>
</tr>
<tr>
<td>Materials library No</td>
<td>M9</td>
<td>This code is used if a teacher’s response to “do you have a materials library?” is no.</td>
</tr>
<tr>
<td>Materials library – Kind of</td>
<td>M10</td>
<td>This code is used if a teacher’s response to “do you have a materials library?” is kind of.</td>
</tr>
<tr>
<td>Creating/adapting/supplementing materials</td>
<td>M11</td>
<td>This code is used if a teacher talks about adopting materials according his/her own learners’ needs and/or about supplementing the main course materials.</td>
</tr>
</tbody>
</table>

### TEACHER’S MANUAL

<table>
<thead>
<tr>
<th>Short Descriptor</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Reason for) having/using a TM (for each book)</td>
<td>G1</td>
<td>This code is used when a teacher explains why he/she needs a TM or why they like having one or when he/she simply says he/she uses a TM.</td>
</tr>
<tr>
<td>Reason for) not having/using a TM (for each book)</td>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>This code is used when a teacher explains why he/she does NOT need a TM or the teacher says he/she has not used a TM at all, or does not use it much.</td>
<td>G2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expectations from a TM</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>This code is used when a teacher says he/she expects something from a TM but does not specify what.</td>
<td>GE3</td>
<td></td>
</tr>
</tbody>
</table>

- Teaching tips and background information (explanations about the topic and why it is important to teach it)
  - This code is used when a teacher says he/she expects a TM to provide basic knowledge for pronunciation features, explain what it is, what it contains and to provide teaching tips related to the topic, like how to best teach something, what methods to use etc. | GE4  |             |
- Exercises
  - This code is used when a teacher says a TM should provide a lot of exercises or different types of exercises or exercises for student at different levels. Also use this code if the teacher thinks TM should provide extra resources for homework. | GE5  |             |
- Explanations and examples about exercises
  - This code is used when a teacher says he/she expects a TM to provide explanation/justifications/rationale about the exercises and to provide more examples related to the exercise. | GE6  |             |
- Answer key
  - This code is used when a teacher expects a TM to provide answer key of the exercises. | GE7  |             |
- Audio or Video
  - This code is used when a teacher expects a TM to provide audio for the exercises or videos for teaching (like a video showing the mouth shape while producing a sound) | GE8  |             |
- Explain the rationale of the methods/approach of the book
  - This code is used when a teacher expects a TM to explain the rationale of the methods/approach adopted by the book. | GE9  |             |
- Automatic grading and feedback
  - This code is used if a teacher expects a TM to provide automatic grading and/or feedback. | GE10 |             |

<table>
<thead>
<tr>
<th>Likes about the teacher’s manual</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>This code is used if a teacher says what he/she liked about a teacher’s manual.</td>
<td>GL1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dislikes about the teacher’s manual</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>This code is used if a teacher says what he/she disliked about a teacher’s manual.</td>
<td>GL2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Influence of NOT having a TM</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>This code is used if a teacher says the absence of a TM or the answer key (which would be in a TM) would lead to something like avoiding the exercises without the answers.</td>
<td>G10</td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX F - CODE BOOK FOR INTERVIEW II

#### Materials Evaluation Interview

<table>
<thead>
<tr>
<th>USEFULNESS of the OTM</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Descriptor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usefulness of the OTM</td>
<td>USEFUL</td>
<td>This code is used if a teacher says the OTM was useful for him/her.</td>
</tr>
<tr>
<td>Positive Evaluation</td>
<td>EVALPOS</td>
<td>This code is used if a teacher says something positive about the OTM or says he/she likes the OTM. This code is used especially if no reason is given for liking the OTM.</td>
</tr>
<tr>
<td>Positive evaluation</td>
<td>EVALPOSEXPL</td>
<td>This code is used if a teacher says something positive about the explanations in the OTM.</td>
</tr>
<tr>
<td>Positive evaluation</td>
<td>EVALPOSEXERC</td>
<td>This code is used if a teacher says something positive about the exercises in the OTM.</td>
</tr>
<tr>
<td>Positive evaluation</td>
<td>EVALPOSDES</td>
<td>This code is used if a teacher says something positive about the design and the layout of the OTM.</td>
</tr>
<tr>
<td>Suggestions about</td>
<td>SUG-IMP</td>
<td>This code is used if a teacher says he/she does not like something in the OTM and/or suggests something for the improvement of the OTM.</td>
</tr>
<tr>
<td>Expectations from the</td>
<td>EXPECT</td>
<td>This code is used if a teacher names something he/she would expect from the OTM.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INFLUENCE of the OTM</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Descriptor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influence of the OTM</td>
<td>INF-CONF</td>
<td>This code is used if a teacher explicitly talks about or implies the influence of the OTM on his/her confidence.</td>
</tr>
<tr>
<td>Influence of the OTM</td>
<td>INF-KNOW</td>
<td>This code is used if a teacher states that the OTM contributed to his/her subject-matter knowledge, pedagogical content knowledge or background knowledge.</td>
</tr>
<tr>
<td>Influence of the OTM</td>
<td>INF-TP</td>
<td>This code is used if a teacher says the TM may influence what pronunciation features teachers may prioritize or in what order they</td>
</tr>
</tbody>
</table>
would teach those features. This code is also used if a teacher says using the OTM caused some changes or novelties in his/her way of teaching pronunciation or certain features of pronunciation.

### Influence of the OTM on teachers’ attitudes towards technology

**INFATTECH**

This code is used if using the OTM creates any changes in a teacher’s attitudes towards the use of technology. For instance, if a teacher normally likes print material but is open to trying something online because he/she liked the way OTM worked, this code is the appropriate one.

### Influence of the OTM on teachers’ attitudes towards pronunciation teaching

**INFATPRON**

This code is used if using the OTM creates any changes in teacher’s attitudes towards pronunciation teaching. For instance, if a teacher thinks pronunciation teaching seems easier after using the OTM, this is the appropriate code.

## MISCELLANEOUS

<table>
<thead>
<tr>
<th>Short Descriptor</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downloading PDFs</td>
<td>HAB-D1</td>
<td>This code is used if a teacher says he/she downloads the PDFs of student materials or the OTM.</td>
</tr>
<tr>
<td>Preference for online materials because of a reason</td>
<td>MAT-PREF-ONLINE</td>
<td>This code is used if a teacher says he/she would prefer the online material because of a given reason.</td>
</tr>
<tr>
<td>Preference for printed materials because of a reason</td>
<td>MAT-PREF-PRINT</td>
<td>This code is used if a teacher says he/she would prefer the printed material because of a given reason.</td>
</tr>
<tr>
<td>Preference for mode of information</td>
<td>MAT-PREF-MODE</td>
<td>This code is used if a teacher says she likes reading written explanations or watching videos more, use this code.</td>
</tr>
<tr>
<td>Attitudes towards technology</td>
<td>ATTECH</td>
<td>This code is used if a teacher talks about his/her overall attitudes towards technology.</td>
</tr>
<tr>
<td>Technological problem</td>
<td>TECHPROB</td>
<td>This code is used if a teacher reports a technical problem.</td>
</tr>
</tbody>
</table>
APPENDIX G - LIST OF TEXTBOOKS NAMED BY TEACHERS IN THE STUDY

Books listed by NESTs


**Books listed by NNESTs**


Date: 3/10/2016
To: Sinem Sonsaat  
240 Raphael 21  
Ames, IA 50014

CC: Dr. John Lewis  
337 Ross Hall

From: Office for Responsible Research

Title: The role of teacher's manuals in pronunciation teaching: An answer key or a complete guide?

IRB ID: 15-779

Approval Date: 3/9/2016  
Date for Continuing Review: 3/8/2018

Submission Type: New  
Review Type: Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 50), please be sure to:

- Use only the approved study materials in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.
- Retain signed informed consent documents for 3 years after the close of the study, when documented consent is required.
- Obtain IRB approval prior to implementing any changes to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences involving risks to subjects or others; and (2) any other unanticipated problems involving risks to subjects or others.
- Stop all research activity if IRB approval lapses, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- Complete a new continuing review form at least three to four weeks prior to the date for continuing review as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. Approval from other entities may also be needed. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. IRB approval in no way implies or guarantees that permission from these other entities will be granted.

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 1138 Pearson Hall, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.