Computer-Aided Self-Access Pronunciation Materials Designed to Teach Stress in American English

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COMPUTER-AIDED SELF-ACCESS PRONUNCIATION
MATERIALS DESIGNED TO TEACH STRESS
IN AMERICAN ENGLISH

by

Ann-Marie K. Bott

A master’s project submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Arts

Department of Linguistics and English Language
Brigham Young University
August 2005
of a master’s project submitted by

Ann-Marie K. Bott

This project has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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As a chair of the candidate’s graduate committee, I have read the project of Ann-Marie K. Bott in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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ABSTRACT

COMPUTER-AIDED SELF-ACCESS PRONUNCIATION
MATERIALS DESIGNED TO TEACH STRESS
IN AMERICAN ENGLISH

Ann-Marie K. Bott
Department of Linguistics and English Language
Master of Arts

In recent years, increasing attention has been placed on providing pronunciation instruction that meets the communicative needs of nonnative speakers (NNSs) of English. Empirical research and pronunciation materials writers suggest that teaching suprasegmentals before segmentals to intermediate and advanced NNSs could be more beneficial in a shorter period of time. However, the majority of the materials available that emphasize suprasegmentals are textbook-based, relying principally on classroom settings and teacher feedback. The purpose of Pronunciation Progress: Stress in American English is to provide NNSs with pronunciation materials for self-access and student-directed learning environments. These materials are designed as a series of computerized modules that focus on one element of suprasegmentals – stress.

Pronunciation Progress: Stress in American English is divided into three units: syllable unit, word unit, and sentence unit. Each unit consists of different sections that
include explanations of the content, examples, and practice exercises with immediate feedback. Learners can listen to native speakers on the computer and navigate through the content at their own pace, focusing on specific areas that they deem important for their learning.

A pilot study was conducted over a three week period to evaluate these materials. Students at Brigham Young University’s English Language Center provided written and oral feedback detailing their reactions to the materials. Participants responded to surveys for each of the three units and participated in a focus group that gathered comments regarding the overall usefulness and design of the program.

Overall reactions to the program were very positive. In general, participants responded favorably to each of the three units for statements regarding ease of use, level of enjoyment, clarity of directions, newness of knowledge, interest of practice exercises, understanding of examples, and desires to practice outside of the lab. Many of the students said that they enjoyed all of the units, and all but one who participated in the focus group commented that they liked the sentence unit the most. Student comments also implied that participants had a raised awareness of features of stress in American English.
ACKNOWLEDGEMENTS

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CHAPTER 1
INTRODUCTION

Origins and Purpose of Project

Teachers and researchers have analyzed the importance of intelligible pronunciation for nonnative speakers (NNSs) of English in their ability to communicate successfully (Derwing, Munro, and Wiebe, 1998; Jones, 1997; Morley, 1991, 1994; Yule and MacDonald, 1994). Although researchers have debated whether or not pronunciation instruction can even help adult learners of English (Krashen, 1982; Lenneberg, 1967), some researchers and teachers suggest that adults can improve their pronunciation in varying degrees and that pronunciation instruction can help with learner comprehensibility and intelligibility (Acton, 1984; Derwing, Munro, and Wiebe, 1997). Others claim that pronunciation instruction can also help learners feel empowered and confident in their use of the English language (Celce-Murcia, Brinton, and Goodwin, 1996; Grant, 1995; Morley, 1991). More recently, there has also been a movement toward using technology in order to go beyond the limits of the classroom and give learners more autonomy and control in enhancing their English language proficiency and accuracy (Anderson-Hsieh, 1990; Pennington, 1999).

While many English language pronunciation materials exist, the majority of these materials are designed for use in a teacher-directed, classroom setting. More and more texts are being published with accompanying audio CDs and cassette tapes or CD-ROMs for the computer that give learners the opportunity to improve their listening skills and to imitate words and phrases produced by native speakers. Although students often find these resources helpful, they are designed to be used in a classroom context where a
teacher is able to give students immediate feedback on the practice exercises contained in
the texts. For learners who do not have access to a formal learning environment, they
often resort to just reading the text and trying to make sense of the accompanying tasks.

Students who want to work on pronunciation materials in a computer lab setting,
however, have more limited choices based on the materials that either they or the lab
have purchased. Some of the materials can become very costly. In the case of Brigham
Young University’s (BYU’s) Self-Access Study Center (SASC), few pronunciation
materials are available for use on the computer. Part of the reason for the lack of
materials is their cost and another part of the reason is the limited amount of materials
designed for use in a computer lab setting. Materials that are available, such as the CD-
ROM that accompanies the textbook Pronunciation Pairs, provide learners with
pronunciation exercises at the word level where they are practicing isolated sounds or
minimal pair contrasts. Empirical research aimed at analyzing the effect of different
pronunciation teaching methods has shown that a focus on segmentals, even over the
course of twelve weeks, will produce limited results in second language (L2) learners’
comprehensibility (Derwing, Munro, & Wiebe, 1998). More attention needs to be given
to addressing globalized errors which include addressing suprasegmentals like stress,
tonation, pausing, and linking. While some pronunciation materials designed for self-
access study are available via the Internet, such as the website created by Essberger
(1997), the very technology that delivers the materials may also constrain what learners
can do.

More pronunciation materials are needed that provide independent learners an
opportunity to practice with materials aimed at developing what empirical research has
shown to have a significant impact on L2 learners’ comprehensibility, namely suprasegmentals.

The materials, *Pronunciation Progress: Stress in American English*, are designed to help fill this gap between current classroom-based pronunciation materials and those that are needed for self-access settings. This program has been created using Revolution® software to provide intermediate to advanced level English language learners with explanations, examples, and practice with immediate feedback to help them become more aware of different elements of stress in American English.
CHAPTER 2

REVIEW OF LITERATURE

Grant (1995) observes that “It is possible that some of the lack of progress in pronunciation to date lies not in limitations within the learner, but in problems with the materials, conditions, and contexts for learning” (p. 121). Consequently, materials writers have offered suggestions on how to enhance pronunciation teaching materials. Pennington (1999) recommends that computer-assisted pronunciation (CAP) materials start with theory behind the curriculum and program, build skills in stages (by introducing a concept and adding to what students already know), and provide opportunities for learners to raise their awareness of English pronunciation. In addition, computer-based pronunciation teaching materials should incorporate multiple practice exercises with feedback and content that is flexible enough for a self-access environment.

This chapter will review an overview of communicative language teaching, materials available for pronunciation instruction, empirical research that supports the teaching of suprasegmentals, materials available in self-access learning environments, as well as describe the delimitations for this project, *Pronunciation Progress: Stress in American English*.

Overview of Communicative Language Teaching

Over the past 20 years, the focus on Communicative Language Teaching (CLT) has influenced English pronunciation instruction. As opposed to some of the previous teaching methods that focused on the mastery of individual skills, such as reading and writing, the main goals for CLT focused on helping learners to be able to communicate effectively and appropriately in real-life contexts, a term that became known as
communicative competence (Hymes, 1972). In order to achieve communicative competence, more attention was given to integrating all of the skills, including listening and speaking skills, so that NNSs could communicate with NSs and be understood. Eventually, pronunciation instruction was also recognized as an important element to help NNSs become comprehensible in English (Celce-Murcia, et. al, 1996; Florez, 1998). Although some teachers believed that the interaction between nonnative speakers (NNSs) and native speakers (NSs) would provide sufficient pronunciation help (Grant, 1995), educators began favoring the position that addressing the pronunciation needs of their students was part of their professional responsibility (Morley, 1991). Consequently, instead of practicing pronunciation through listen and repeat exercises from prescribed dialogues as dictated by early types of pronunciation materials, learners were given opportunities to create their own practice in more meaningful contexts. In addition, current goals for pronunciation instruction changed from attempts to aid students in achieving native pronunciation to efforts that help NNSs become more comprehensible in English (Morley, 1991, 1994; Celce-Murcia, et. al, 1996).

The focus on communicative competence eventually extended beyond linguistic competence to include discourse, sociolinguistic, and strategic competence (Morley, 1994). The emphasis on discourse competence, or longer utterances, also created additional exploration as to the features that influence comprehensibility, such as segmentals, or individual sounds and phonemes; suprasegmentals, or elements above the sound level, such as stress, rhythm, intonation, and thought groups (pausing); and voice quality settings, such as rate of speech, pitch, and loudness (Blau, 1990; Esling and Wong, 1983; Morley, 1991). The role of pronunciation teaching has also broadened its
perspective from individual sounds towards discourse competence that includes words, phrases, sentences, and paragraphs (Hahn and Dickerson, 1999; Morley, 1994).

Over the past 15 years, pronunciation researchers and pedagogy have shifted focus away from concentrating on segmentals, to placing more attention on suprasegmentals (Morley, 1991). A significant reason for this change has been based on theories that suprasegmentals are more beneficial at the discourse level than segmentals (Florez, 1998; Hahn and Dickerson, 1999). In addition, comprehensibility can be impacted more through improving suprasegmentals than segmental production (Celce-Murcia, et. al, 1996; Derwing, et. al, 1998; Jenkins, 2002; McNerney and Mendelsohn, 1992).

Practical pedagogical concerns also account for the emphasis on suprasegmental instruction. Teachers of English to speakers of other languages find it difficult to focus on segmentals when their classes are composed of students with a variety of different language backgrounds, and common segmental errors differ from one language background to another (Avery and Ehrlich, 1992). For example, native Japanese speakers often have difficulties with the /r/ and /l/ phonemes while native Spanish speakers may have more trouble distinguishing between /b/ and /v/. In an ESL class with many first language (L1) backgrounds, addressing segmental elements may not be as efficient or effective for the majority of students as introducing suprasegmentals first (Anderson-Hsieh, Johnson, and Koehler, 1992; Avery and Ehrlich, 1992; Hahn, 2004; McNerney and Mendelsohn, 1992). Consequently, pronunciation researchers and materials developers have advocated for instruction aimed at improving suprasegmental features in English as a way to help heterogeneous groups of L1 learners improve their

Pronunciation Materials

Morley (1991) encouraged pronunciation teachers to see pronunciation instruction in English as more than just a focus on sound production by suggesting a “dual-focus framework.” She indicated that beyond a micro focus on elements such as syllable structure, stress, rate, and volume, teachers need to address macro issues of “general elements of oral communicability,” such as overall clarity of speech and voice quality effectiveness for discourse-level pronunciation (p. 497). This attention to both speech production and speech performance would not only better address learners’ goals for pronunciation improvement, but would push them closer to the end goal of communicative competence.

Firth (1992) suggests a similar pedagogical focus in her “zoom principle.” Instruction shifts focus between “overall effectiveness of communication, to a specific problem, to overall effectiveness of communication, and so on” (p. 173). Thus, teachers should focus on more global aspects of pronunciation, such as suprasegmentals and voice quality settings, then identify specific needs that the learners have with pronunciation, such as frequent segmental errors, then focus back on the global aspects that are common with all of the learners. This focus on more global and specific issues related with pronunciation teaching helps avoid the pendulum swing from one extreme focus to another.

In addition to incorporating both a micro and macro focus in pronunciation teaching, TESOL professionals suggest using materials that integrate listening, speaking,
and pronunciation skills into oral communication and introduce pronunciation aspects in a context (Gilbert, 1993; Miller, 2000; Morley, 1991; Murphy, 1991). Other materials writers agree that pronunciation instruction should also provide activities that go beyond the classroom to help students apply what they have learned in real communicative contexts (Acton, 1984; Grant, 1995; Morley, 1991).

The organization of pronunciation instruction should also be considered when designing pronunciation materials. Grant (1995) claims that since suprasegmentals help a majority of learners who have differing learner variables and needs, greater emphasis should be placed on suprasegmentals than segmentals in pronunciation textbooks. While materials writers still recognize that segmentals can affect overall comprehensibility, they also suggest that suprasegmentals should come first in textbook sequencing because of their focus on the macro elements of speech performance (Firth, 1992; Grant, 1995). Instruction should begin with more basic elements of suprasegmentals, such as the notion of the syllable, expand into more complex issues, such as word stress, and then recycle the information throughout the textbook (Grant, 1995; Pennington, 1999).

Materials developed over the past 15 years have incorporated these suggestions. Many pronunciation textbooks include certain elements of suprasegmental instruction, including that of syllable, word, and sentence stress, in a communicative context (Gilbert, 1993, 2001; Grant, 2001; Henrichsen, Green, Nishitani, and Bagley, 1999; Hewings & Goldstein, 1998; Miller, 2000; Orion, 1997; Sheeler & Markley, 1991). Some of these textbooks also introduce suprasegmentals before introducing segmentals (Gilbert, 1993, 2001; Grant, 2001; Miller, 2000) and focus on broader perspectives of pronunciation instruction then narrow to a specific aspect of pronunciation teaching (Grant, 2001;
Henrichsen, et. al, 1999; Orion, 1997; Miller, 2000; Sheeler and Markley, 1991). While materials writers and teachers have changed the way that pronunciation is taught, the field has still been in need of empirical research that gives validity to these new instructional approaches.

Empirical Research on the Effectiveness of Suprasegmental Instruction

Empirical research investigating the effectiveness of suprasegmental instruction has been slow to follow. Early research sought to identify pronunciation features that influenced NS’s comprehension of nonnative speech.

A study by Anderson-Hsieh, Johnson, and Kohler (1992) isolated the errors in speech samples from 60 tapes selected from the SPEAK Test. The SPEAK test is a test widely used at universities throughout the United States to evaluate the speaking proficiency of International Teaching Assistants (ITAs). The SPEAK Test provides an overall pronunciation rating, rather than ratings for individual pronunciation elements. The researchers wanted to find out what influenced the overall ratings of high and low scores.

Anderson-Hsieh, et al. (1992) used trained ESL professionals to rate the NNS’s pronunciation. Three raters who had previously judged the SPEAK Test, evaluated the NNS speech samples for specific errors in segmentals, prosody, syllable structure, and voice quality. The results imply that the prosodic variables, or suprasegmental components, were most strongly associated with the pronunciation scores, regardless of the native language. The errors in segmentals and syllable structure were most closely related to the native language, but they did not affect the overall score as much as suprasegmentals did.
A key empirical study designed to evaluate segmental and suprasegmental instructional methods was conducted by Derwing, Munro, and Wiebe (1998). The study compared the effects of three different types of pronunciation instruction: local (segmentals), global (suprasegmentals), and no overt pronunciation instruction (on nonnative English speakers). The question to be answered was which type of instruction was most effective and would positively affect students’ comprehensibility, accentedness, and fluency. Similar teaching methods were used for each class, and length of instruction was twelve weeks. Speech samples of sentence-length utterances and extemporaneous narratives were collected from the students before and after the course, and native speakers rated the samples on a 9 point scale according to amount of accentedness, comprehensibility, and fluency.

Findings for this study suggest that even though the segmental group showed the greatest overall improvement in accentedness at the sentence level, only the global group made significant improvement in comprehensibility when it came to narrative speech. The group with no specific pronunciation instruction showed no improvement in any section. The researchers conclude that pronunciation instruction over a short period of time (12 weeks) can be beneficial, with the most significant gains occurring in classrooms where the pronunciation instruction focuses on global elements (suprasegmentals).

Recognizing the importance of suprasegmental instruction in pronunciation, researchers have begun looking at specific aspects of suprasegmentals and their influence on NS comprehension of nonnative speech (Hahn, 2004; Pickering, 2001). Hahn (2004) conducted a study that compared the effects that different primary stress placement had
on the perceptions of native English speakers. She particularly examined native English speakers’ perceptions of how a NNS stressed certain words in a sentence in order to signal new and contrastive information, a term that she called the Given-New Stress Connection (GNSC). An ITA from Korea with a high proficiency in English recorded three separate versions of the same text: version A used good GNSC (old information was not stressed and new information was stressed), version B misplaced the primary stress (old information was stressed and new information was not stressed), and version C had the absence of primary stress all together. The recordings were digitally edited to be approximately the same length and volume, and freshmen NSs of English listened to one of the three tapes, wrote their overall feelings of the lecture, and then took a comprehension quiz. The reaction speed of the NSs was also analyzed, based on how quickly they responded to beeps on the computer. The results indicate that the reaction speed, recall and comprehension quiz, and student evaluations were the highest for version A (good GNSC). People also scored higher on version C (no primary stress placement) than version B (misplaced stress). Given the small number of subjects, the overall findings were not statistically significant, but these findings do give indication that correct primary stress placement can facilitate communication and may be beneficial to include in pronunciation instruction.

While research evaluating the effectiveness of specific types of pronunciation instruction has been slow in coming, the results thus far do seem to support the teaching of suprasegmentals, including primary stress, to learners of all language backgrounds before concentrating efforts on segmentals (Derwing, et al, 1998; Grant, 1995; Hahn, 2004; McNerney & Mendelsohn, 1992; Pickering, 2001). Individual learner variables
must also be considered, as they could be as important as the instructional factors (Firth, 1992; Grant, 1995; Henrichsen, Fritzen, & Eggett, 2004; Morley, 1991; Yule & MacDonald, 1994).

Materials for Self-Access

Many pronunciation texts and materials on the market, however, are generally designed for the language learning classroom where a teacher determines the sequence of material to be learned, selects the items to be practiced, and provides immediate feedback to learners. For learners who want to improve their pronunciation but are not in an organized class or who want to work independently, their options are more limited. This situation is one in which technology might provide an answer.

Windeatt (1999) recommends that the computer be used as a tool for those interested in autonomous learning. Pennington (1999) suggests that Computer-aided Pronunciation (CAP) has great potential to enhance individualized pronunciation instruction, therefore increasing learners’ motivation, and can provide immediate feedback that is repeatable and reliable. However, she also claims that “CAP remains more a set of exciting potentials for instruction than an exciting reality” (Pennington, 1999, p. 431) and that although computer technology as an instructional tool has considerable promise, instructional developers have been slow to develop pronunciation software materials.

Since Pennington’s comments, attempts have been made over recent years to provide pronunciation materials for self-access environments. These materials have come in a variety of mediums, such as books, audiotapes and CDs, CD-ROMs, Internet, and other computerized materials. While many of these resources claim to promote self-
directed learning, the materials are often supplements to textbooks or other classroom materials and provide learners with little or no opportunities for feedback other than perhaps a teacher or native speaker. For example, CDs for individualized practice that accompany materials designed for a classroom provide the learner with the opportunity to hear native speaker pronunciation, but students can only imitate native speech with no feedback. Other materials, such as pronunciation exercises available on the internet or on CD-ROMs, may come closer to self-directed learning with practice, instruction, and explanations given. Some programs even allow the users to record their own speech and hear what they have recorded, but the programs are limited in scope and provide few exercises that allow learners to practice specific suprasegmentals with the capability of receiving immediate feedback.

In a Self-Access Center (SAC) like BYU’s SASC, some pronunciation materials are available, but they often consist of supplements to textbooks and include listen and repeat minimal pair exercises. In a recent study conducted at BYU’s ELC by Tanner, McMurry, and Allen (2004), students were asked what materials they would like to have available in the SASC. Of the 120 ELC students who took the survey, pronunciation exercises ranked number one as the most desired material. While the desire for additional pronunciation materials in BYU’s SASC is evident, more materials are needed that give learners an opportunity to do some concentrated instruction and practice on specific suprasegmentals.

_Pronunciation Progress: Stress in American English_, is designed to address this need. The primary objective for developing this master’s project is to create computerized pronunciation materials based on current research that can provide
explanations, interactive practice, and feedback to intermediate and advanced learners of English. Due to the complexity of the technology and depth of the content, the program is designed to focus on one element of suprasegmentals – stress. The ultimate goal for this project was to raise learners’ consciousness and help them to increase their understanding of stress in American English. These materials are designed to create an additional resource for learners who may have limited access or no access to teachers but who have access to a computer. Further description of these materials is included in chapters three and four.

Delimitations

Recognizing that suprasegmental instruction has been shown to be influential in the development of L2 learners’ global pronunciation accuracy, and understanding the current lack of materials for pronunciation instruction available in self-access centers, I desired to focus on the development of self-directed pronunciation materials on the computer aimed at helping learners understand the principle of stress in American English and provide them with real practice opportunities where feedback could be received.

The principal areas of suprasegmentals include stress, intonation, pausing, and linking (rhythm). Developing materials to address all of these areas is beyond the scope of a master’s project, so the area of stress in English was selected for development. Hahn and Dickerson (1999) comment that stress is one of the “features of English pronunciation that affect intelligibility the most” (p. v). This is further justification for creating materials that focus on key elements of stress.
CHAPTER 3

PROJECT RATIONALE AND DEVELOPMENT

Project Rationale

The review of literature has suggested that pronunciation instruction that emphasizes suprasegmentals, such as stress, intonation, rhythm, and thought groups will enhance the development of comprehensibility for intermediate to advanced learners of English more in a shorter period of time than instruction focusing on segmentals (Derwing, Munro, and Wiebe, 1998; Hahn, 2004; Pennington, 1999). Pronunciation researchers also emphasize that learners need opportunities to practice their pronunciation outside of the classroom setting (Acton, 1984; Grant, 1995; Morley, 1991).

The materials developed for this project, *Pronunciation Progress: Stress in American English*, help fill this need for easy to use, self-directed materials to teach an aspect of suprasegmentals, namely stress. This computer program was created in Revolution®, is cross-platform, and can be downloaded onto any number of computers. Students can practice elements of stress and receive feedback with little or no help from a teacher. The materials are self-contained, meaning that students are taken through a series of modules (from syllable stress to word stress to sentence stress) that include explanations of the content, examples, and interactive practice exercises. Instructions are provided for each section along with exercises designed to raise learners’ consciousness to elements of stress and provide practice with immediate feedback. Due to the technological complexity, content depth, and timing constraints, the program is designed to focus on one element of suprasegmentals – stress. These materials are designed to be
self-directed to create an additional resource for learners who may have limited access or
no access to ESL/EFL teachers, but who have access to a computer.

Project Development

The initial thrust of the project was to help fill the need for more pronunciation
materials in the Self-Access Study Center at BYU. My goal was to develop a program
that could be used in a self-access setting with little or no help from a teacher and to
provide explanations and practice of the principle of stress in English. The design of the
materials was to also include the opportunity for immediate feedback on the practice
items. I sought to meet these goals by working on two objectives simultaneously: 1) the
content development, and 2) the technology development. I followed the suggestions
from Pennington (1999) by developing a program based on current pronunciation theory
while at the same time maximizing the capabilities of the computer.

Content Development

Materials designed to teach pronunciation have gained renewed attention over the
last 10 years with a particular focus being on suprasegmentals. As explained in the
section on delimitations, developing materials for each of the suprasegmentals areas
would have been beyond the scope of a master’s project. Therefore, the emphasis of this
project was to select one area of common difficulty for all NNSs who are learning
American English as a second or foreign language. The area selected was stress.

My first step in the project development was to review current ESL pronunciation
teaching texts and pronunciation teaching methodology texts designed for ESL teachers.
The books in Table 1 were selected because the authors are well recognized and many of
them have presented at national and international conferences. (See Table 1). In addition
to reviewing published textbooks, I also reviewed academic research articles (Anderson-Hsieh, 1992; Hahn, 2004) which had researched elements of stress in order to identify these key areas that should be included in an instructional module.

Table 1.

<table>
<thead>
<tr>
<th>List of Pronunciation Teaching Texts Surveyed</th>
</tr>
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<tbody>
<tr>
<td><strong>Title</strong></td>
</tr>
<tr>
<td><em>Well Said: Pronunciation for Clear Communication</em></td>
</tr>
<tr>
<td><em>Pronunciation Matters</em></td>
</tr>
<tr>
<td><em>Pronunciation Plus: Practice Through Interaction</em></td>
</tr>
<tr>
<td><em>Pronouncing American English: Sounds, Stress, and Intonation, 2nd Ed.</em></td>
</tr>
<tr>
<td><em>Clear Speech: Pronunciation and Listening Comprehension in North American English, 2nd Ed.</em></td>
</tr>
<tr>
<td><em>Sound Advantage: A Pronunciation Book</em></td>
</tr>
<tr>
<td><em>Sounds and Rhythm: A Pronunciation Course</em></td>
</tr>
<tr>
<td>Reference</td>
</tr>
<tr>
<td><em>Speech Craft: Discourse Pronunciation for Advanced Learners</em></td>
</tr>
<tr>
<td><em>Teaching Pronunciation: A Reference for Teachers of English to Speakers of Other Languages</em></td>
</tr>
<tr>
<td><em>Teaching American English Pronunciation</em></td>
</tr>
</tbody>
</table>

I reviewed these materials and paid attention to the content information about stress that was included as well as how the authors presented the material through
practice exercises, activities, and examples. The pronunciation reference texts provided helpful information regarding what content to include when designing a curriculum and the student textbooks showed examples of practice activities. Even with all of these resources, none of the textbooks, however, was designed to be used in a self-access setting with little or no teacher input.

After reviewing the pronunciation texts, I began the process of creating a software program that would both teach about the elements of stress in American English, and allow students to be in control of the practice exercises and the feedback received from the practice sets. The context for use would be a self-access lab. I first made an outline of the necessary elements of stress to include. From the examples seen in my research, I chose to divide the presentation and practice of stress into three parts: 1) syllable stress, 2) word stress, and 3) sentence stress. Each area was further divided into more specific content. Each section was designed to begin with an explanation, followed by examples and then opportunities for practice. Once the content was organized the next challenge was to begin the creation of the software module.

Technology Development

I started this project with very little background in technology except for basic typing skills and some working knowledge of Microsoft Word®. I was quite overwhelmed at the beginning in deciding how to begin the creation of the product. My first decision was to select the appropriate software that would provide the capabilities of building a pronunciation program in a modular format. I was directed to Revolution®, an instructional software authoring program for people who may or may not have a lot of programming background and who want to design programs that could be used as
standalone applications, without the need for the actual Revolution® software.

Revolution® evolved from the previous HyperCard®, which was also instructional software.

In order to gain a basic understanding of Revolution, I enrolled in CHum 281 (Computers and Humanities; Computers and Teaching 1) at BYU. I began the journey of learning the program language known as Transcript. I first established how the content in Revolution® is organized, based on stacks (the overall module layout), cards (the screen that users see), and then objects on the screen (such as buttons, items that the user can push that usually do certain things; fields, which can be used to write text; graphics, or shapes; images, used for pictures; and players, used to play audio or video). From this understanding, I could create a stack with cards that contained fields, buttons, and objects. Even with this knowledge, I still lacked the ability to have those objects do what I wanted them to do. This ability came later through increased knowledge of scripting using Revolution’s® Transcript language. A handler is what hosts the commands of an object and can be used on any object. Thus, if I want the object to do something, I script the handler in that object. I learned how to go from one card to another, hide and show objects, create visual effects (such as dissolving in and out of a screen), and understand basic ways to play sounds. In this class, we were shown examples of quizzing techniques, such as multiple choice and true/false, which were useful for comparing information to check if the answer was correct. After learning basic elements of Revolution, I used this knowledge to begin the first draft of my project.

First Project Version. By the end of Fall semester 2004, I had gone well beyond the class requirements to create a project using three of the elements that we had learned
in class throughout the semester. I used the knowledge gained to develop the syllable unit. I created a stack based on color schemes that seemed visually pleasing (blues, grey, purple, and yellow), and designed the project to include explanations, examples, and practice. I tried to make the layout consistent, with a menu bar at the top (which included all of the units: Introduction, Syllable, Word, and Sentence), navigation arrows at the bottom, and text fields that displayed the text.

The first project version was a learning process that included things that I liked such as the color schemes, menu bar idea, and practical applications for the quizzing techniques. However, I also recognized elements that I needed to change in the program. The way that I originally displayed the content included too much information on each card, which could be especially overwhelming for NNSs of English. I had the explanations and the examples on the same card, and I had all ten questions on the practice screen at once. Throughout this version of the project, I was providing the learner with too much information all at once.

The more I worked on the project, the more I realized that programming takes an enormous amount of time. Everything I wanted to have happen on the screen, I had to program, such as highlighting words, checking the student’s answer with the correct answer for each question, and providing options for the user to navigate through the program. I spent hundreds of hours just programming one unit, and then I realized the challenges with editing. Because I put the content in individual fields, when I needed to make revisions, I had to go to each field and change the contents. This method was extremely time-consuming and less effective, especially since some of the fields were hidden. Even with this beginning, I still wasn’t happy with the capabilities and the look
of the program. Students in my Linguistics 678 (Materials Development) class gave me helpful feedback on this initial version of the project that they liked some of the interactive features of the program, such as the practice exercises that provided feedback, but they thought that some of the overall layout and design was confusing, and they did not always know what to do.

Second Project Version. In winter semester 2005, I took CHum 381 (Computers and Humanities; Computers and Teaching 2), in order to obtain more advanced programming knowledge so that the operation of the project and flexibility in the practice exercises could be improved. This class taught me key principles that helped the design of my project significantly, such as overall stack design, effective use of external files, and multimedia elements, such as audio and video files. After learning more about instructional design and the overall layout for Revolution® stacks, I understood the importance of making the screen less “busy.”

Consequently, I started over with my project. This time, I sought advice on how to display content and examples without their being overwhelming and appearing cluttered to the user. I decided to organize the content within each section as bullet points that users could click on to display the information of that point in a text field that would appear. I would also include the examples on a separate card, creating a button on the bullet point that had examples so that users could go to the example card. I used this method with providing the explanations throughout the entire modular unit. (I created a template for the module and then eventually adapted this template to each of the units: syllable stress, word stress, and sentence stress.) This method also encouraged me to reorganize my content for the syllable unit and create an outline format for the other
modules, where I had a bullet point and specific information that pertained to that point. Learning more about how to organize the computer files also helped me with my content organization. I became more specific in exactly what the content taught the users. I also tried to use more simplified language and clear examples that NNSs would understand.

Another change that I made to the second version was with the navigation. Instead of having the menu bar go to each unit (syllable, word, and sentence), I created a button on each card that went to the Main Menu stack where users could choose what unit to do. I also changed the navigation menu bar at the top of the screen for each unit to the different sections within each unit. For example, the navigation menu bar for syllable contained key words for the three sections in that unit, namely structure, stress, and reduced. This method of navigation provided users with more flexibility in what they chose to learn. I used many of the same color schemes as the first version and added a red color to let users know what section they were currently viewing for each unit. Red was also used to let users know what bullet point was emphasized.

I also learned how to appropriately use external files, which would allow me to create a document and then reference the file into Revolution®. This was especially helpful with editing and revising the content, as I was able to put all the content for one section in a file and script the stack to appropriately read in the content to the correct field (based on the card name). This method was much more efficient and effective for editing as opposed to finding and changing the contents of each individual field. My tutor in Revolution®, Robert Barclay, helped me significantly with understanding these concepts and incorporating them into my project.
Another element I learned and integrated into my second version was the concept of scripting one card to read in all of the information, although the scripting may appear to be on separate cards. This procedure was used on the cards with the content and practice exercises. The content cards simply changed the content of the text field, depending on the bullet point that was highlighted. The practice exercises were a little more difficult, especially with the randomization feature that I built in. Essentially, the questions would be read in from an external file and were then randomized. The computer would delete a certain number of questions (five of the random questions if the total were ten questions) and then put one question at a time into the question field. Although users think that they are going on to another card because of a visual effect, they are really staying on the same card with the contents of that card changing. The scripting for the practice exercises was by far the most complicated, but the end results showed only one random question at a time with appropriate feedback for each question.

The practice questions were also the most difficult to create. I did not want students to get bored of the same practice questions repeated over and over. Therefore, I tried to design the practice questions using the capabilities of technology while providing effective content practice. This was a difficult task. I first changed the ways that I did the practice questions from the first version in that I showed only one practice question at a time, allowing the students to focus on only one question at once, therefore not becoming so overwhelmed. If the students wanted a different question, they would simply need to click on the right arrow at the bottom of the screen, as stated in the directions. I followed this format throughout each practice exercise, with a title and directions at the top of the page and then the practice objects below. Since the directions were a little more detailed,
I provided the users with a step-by-step process to complete the exercises. I first drew out the format and layout of each practice exercise on paper and then created and scripted these elements into the program. This was more challenging than it appears, as I was using only external files with random questions that corresponded with audio files, all in the context of one card. The drawings on paper helped me to know exactly how I wanted the layout, although sometimes the end results changed when I actually put them onto the computer.

Another important element that improved on the second version was the collection of sound files. I went to the recording studio in the Jesse Knight Humanities Building (JKHB) at BYU and digitally recorded the sound files from three different speakers, one male voice and two female voices. I tried to use more than one voice as a model for native speech, as was suggested by Pennington (1999). The quality of sound recorded from the recording studio was superior to the digital recorder in the first version. I edited the audio files using free Audacity® software and then compressed them into mp3 files. This allowed the files to be much smaller without greatly affecting the quality of the sound. After I had the audio files edited and named correctly and in the right folders, I referenced the external audio files from Revolution® and used a player object to play the compressed files. I scripted the program to play the correct audio files, and the sounds came through on Revolution®. Understanding more of the multimedia capabilities of Revolution® has improved the audio part of my project.

No form of this project was used as course requirements for CHum 381, but I used this as my project for CHum 489R (Computing Project). However, this project went
well beyond the course requirements, as I was only required to spend 6 hours a week on my project, and I averaged almost 16 hours per week over the course of the semester.

Summary

In conclusion, the process for creating *Pronunciation Progress: Stress in American English* was a series of learning steps with the purpose of providing NNSs of English with self-access materials to learn and practice principles of stress in American English. These materials were developed with this goal in mind and have been carried out through careful content and technological considerations. Despite the many trials and errors that have already occurred with this process, future revisions will continue in order for this program to reach its intended goals and objectives.
CHAPTER 4

PROJECT MATERIALS

Overview

The purpose of this project was to develop pronunciation materials based on current research that provides intermediate to advanced learners of English with explanations, interactive practice, and feedback concerning one element of suprasegmentals – stress. These materials are designed for a self-access setting. Through the use of the computer, learners can work at their own pace and focus on the elements of stress that they deem important for their learning with little or no help from a teacher. The ultimate goal for this project is to raise learners’ consciousness and help them to increase their understanding of stress in American English. These materials are designed to create an additional resource for learners who may have limited access or no access to teachers but who have access to a computer.

Given that the program is designed for use on a computer, I will describe the materials by including several screen shots with explanations so the reader will have an understanding of how the modules are organized and the type of activities the learner would use in completing the program.
Main Menu

The program is divided into three units: Syllable Stress, Word Stress, and Sentence Stress (See Figure 1). The main menu displays buttons that will take the users to any of the three units. It also contains an introduction and credits button. Every card has the Main Menu button that will take the users to the screen below. The Main Menu is also at the beginning of the program.

Figure 1. Screen shot of the main menu for *Pronunciation Progress*.
Introduction

The program begins with an introduction. In this segment, learners receive information about the purpose of the program and how the three main units are organized (See Figure 2). Each unit consists of different sections that are divided into pages with explanations, followed by examples, and then practice exercises. The contents for each unit are referenced from external files that can be changed if needed. Each practice exercise is programmed so that the questions appear in a random order every time the page is opened.

Figure 2. Screen shot for the introduction to the program.
Credits

The credits page acknowledges those who contributed with the design and content of the program (See Figure 3).

Figure 3. Screen shot of the credits page.
Syllable Stress Unit

Introduction

The first unit is syllable stress. There is a welcome page that shows learners the three main sections for this unit: syllable structure, syllable stress, and reduced syllables (See Figure 4). The key words of the sections are included in a menu bar at the top of the screen. The section that users are currently viewing for that unit is highlighted in red and changes automatically when the user changes sections. Learners can also change sections by clicking on the menu buttons at the top of the screen. Each unit in the module, including the syllable unit, contains an introduction page. This page identifies what the students will be learning in that unit. At the bottom of the page are two arrow buttons that help learners navigate through the material to go to the next or previous screen.

Figure 4. Welcome screen for syllable stress.
**Syllable Structure Section**

The first page of the syllable structure section gives users three options: overview, form, and spoken syllables. Users can click on each option to read the explanation associated with that word. The *overview* includes information about the definition of a syllable, *form* explains some of the forms that a syllable has, and *spoken syllables* describes the difference between spoken and written syllables (See Figure 5). The following screen shot is an example of what users see when they click on spoken syllables.

![Figure 5. Syllable structure explanation screen.](image)

Following the explanation given regarding spoken syllables, users can click on the button at the bottom of the page to see some prepared examples.
The spoken examples screen shows three examples of how syllable structure differs between spoken English and written English (See Figure 6). Learners can click on the words in purple and hear how the example words are pronounced. A button is also provided at the bottom of the page that gives users the option of returning to the previous page explaining syllable structure.

Figure 6. Spoken examples screen.
Once users have completed those pages providing instruction and explanation regarding syllable structure, the next page gives users an opportunity to practice separating words into spoken syllables (See Figure 7). Users can click on the word and hear the pronunciation of the word. They then select the appropriate number of syllables in the word from a pull-down menu. Once a response has been selected, users can then check their answer by clicking on the “Check Answer” button and immediate feedback will be given stating “correct” or “try again.”

Figure 7. Syllable structure practice screen.

The right arrow at the bottom of the page brings the next question randomly. When learners have finished five questions, an option will come up that asks them if they want to continue with the unit or try the practice again. If they want to continue, they will then go to the next section on syllable stress.
Syllable Stress Section

After users have completed the structure section of the unit on syllable stress, they can then move to the section focusing specifically on the types of syllable stress (stressed and unstressed syllables). The format for this page is similar to the previous content page. Users can click on an option to learn more about that information. On this page, users are given an overview of the differences between stressed and unstressed syllables and then specific features of stressed syllables and unstressed syllables. Figure 8 shows the information that users would see when they clicked on “stressed syllables.”

![Figure 8. Content screen for the section on stressed syllables.](image)

A button to go to the examples page appears when learners click on the “overview” option. The next page shows what the example screen looks like.
The syllable stress examples page provides examples where the primary stress occurs on a specific syllable (See Figure 9). The stressed syllable is shown in capital letters. Users can click on each word and hear how the word is pronounced.

Figure 9. Screen for the syllable stress examples.

Once users have been introduced to stress and unstressed syllables and listened to some examples of words with stressed and unstressed syllables, they can then move to the practice exercise.
The syllable stress practice exercise allows the learners to identify the stressed syllable in each word. Users click on the word and listen for the stressed syllable. They then select the button for the syllable that was stressed. Once a selection has been made, learners can check their answer by clicking on the “Check Answer” button. Figure 10 shows an example of the feedback that will be given if the answer is correct. If the answer is incorrect, the feedback will tell the students to try again and that the answer they chose was an unstressed syllable.

Figure 10. Screen for syllable stress practice exercise when the answer is correct.

Upon completing the syllable stress practice exercises, users then move on to the last section of the syllable unit, that of reduced syllables.
Reduced Syllables Section

The first page of this section provides an explanation of the content, which includes: an overview of reduced syllables, the definition of syllables that are reduced and not reduced, and an explanation of the schwa vowel in English. This vowel occurs frequently in reduced syllables of English. Following the explanation of schwa, users can go to an example page (Figure 11) that provides several examples of how schwa can replace the other vowels in English. Users are given the option to click on each word and hear it pronounced.

Figure 11. Reduced syllables example screen.
After the explanation pages regarding the content and examples for reduced syllables, users are then given the opportunity to practice identifying syllables that are reduced or not reduced (See Figure 12). Once a selection has been made, users can then check their answers by clicking on the “Check Answer” button, which will tell them that their answer is correct or to try again. A help button (?) is also provided if learners need help identifying which syllable in the word is unstressed. When users click on the help button, a pop-up box will appear that tells them what syllable is unstressed.

Figure 12. Screen for reduced syllables practice exercise.

When learners finish 5 practice questions, they are asked if they would like to continue to the next section or try again. If students choose to continue, they will be congratulated for finishing the syllable unit and will be asked if they would like to continue to the word
unit or remain in the syllable unit. If they choose to continue, they will automatically move to the word unit.

Word Stress Unit

Introduction

The second major unit of the program allows users to explore word stress. The word stress unit is divided into three sections: noun/verb contrasts, compounds, and suffixes. The explanations, examples, and practice exercises follow a similar format to the syllable stress unit with moderate variations. The introduction, or welcome screen, can be seen in Figure 13. The key words of each section for the word unit are also included in a menu bar at the top of each screen.

![Welcome screen of the word stress unit.](image)

At the bottom of the page, the right arrow button gives the user the option of continuing to the first section, or noun/verb contrasts.
Noun/Verb Contrasts Section

Following the introduction to word stress, users are next taken to the section describing noun/verb contrasts in English. This content page includes an overview of how stress can shift when the word functions as a noun or a verb and specific information concerning nouns and verbs. Figure 14 is a screen shot of what users will see when they click on “Overview” on the left of the page.

Figure 14. Information screen about noun/verb contrasts in English.

When students finish reading the information about stress on nouns and verbs, they can then click on a button that appears after the “Verbs” option that will take them to the examples for this section.
After learning about words that function as both nouns and verbs, users are given several examples to review (See Figure 15). Learners can click on either noun or verb for each example and hear how the words are pronounced.

Figure 15. Screen for noun/verb contrast examples.

A button is given at the bottom of the page if users want to return to the previous page that gives an explanation of the stress for nouns and verbs that have the same spelling. Once users have finished learning about noun/verb contrasts, they can then move to the practice exercise.
The practice exercise for noun/verb contrasts includes a sentence with an underlined word in context. Users need to choose the button that illustrates the appropriate stress for that word. Learners can hear each word in context by clicking on the button showing a person wearing headphones (See Figure 16). This button occurs throughout the word and sentence modules each time users are given the option to hear a sentence.

![Figure 16. Screen of noun/verb contrasts practice exercise.](image)

Once users choose a box with what they think is the appropriate word stress, they can check their answer by clicking on the “Check Answer” button. Feedback will tell them if they are correct or need to try again. The right arrow button at the bottom of the page allows users to move forward to additional randomized practice questions. Once they are finished with this section, they will then move to the compounds section.
**Compounds Section**

The third section in the word stress unit addresses the topic of compound words and adjective + noun sequences and the stress patterns associated with each. The section begins with an explanation for compounds that contains options to learn about an overview, noun compounds, and noun + adjective sequences followed by examples of noun compounds and noun + adjective sequences in sentences (See Figure 17). Users can click on each sentence and hear the stress patterns associated with the noun compound or noun + adjective sequence.

![Figure 17. Screen shot of examples for adjective + noun sequences.](image)

Once learners are finished with the explanation and examples for compounds, they can then move on to the practice exercise for this section.
The compounds practice section that follows is a drag and drop exercise. Two sentences are given with fill-in-the-blank spaces for users to select either the compound or adjective + noun sequence. Users must choose the appropriately stressed phrase for each blank from the two buttons and then drag and drop the button with the correct stress to the field next to the question that corresponds with it. Users can then click on the “Check Answer” button to receive immediate feedback regarding their choices. The response will either be “correct” or “try again.” The buttons will also change to green (if correct) or red (if incorrect). Figure 18 is a screen shot of the initial practice setup.

![Image of the initial practice set-up screen of the compounds practice.](image-url)

Figure 18. Initial practice set-up screen of the compounds practice.

The following page (Figure 19) shows an example of what this same screen would look like once the user chose the answers and clicked on “Check Answer.”
45

Figure 19. Example of the completed compounds practice screen.

Arrows at the bottom of the screen allow users to move forward to the next question or to return the explanation about compounds and adjective + noun sequences. Once they have completed the questions for the compounds practice, they will then move to the suffixes section.

**Suffixes Section**

The final section in the word stress unit is the section on suffixes. Similar to the previous sections, the suffix section begins with an explanation page that provides information for an *overview* of suffixes, *stress with suffixes*, *common suffixes*, and *stress shifts in words*. Users can click on each option on the left of the screen to learn more information about that topic, which will appear in the white box on the right of the screen. The common suffixes option contains information concerning: 1) stress on the suffix, 2) stress one syllable before the suffix, 3) stress two syllables before the suffix,
and 4) suffixes that do not change stress. Figure 20 is an example of how the screen looks when users click on “Common Suffixes” on the left. Because the information for predicting the stress of common suffixes is longer than the other topics and has more examples, learners can click on the phrase that is underlined in the white box, and it will take them to the examples associated with that phrase. For example, if students want to see examples for when stress is on the suffix (the first phrase), they can click on that phrase and it will take them to an example page of when stress is on the suffix (See Figure 21 on the next page).

Figure 20. Screen shot of the explanation page for the suffixes section.
The example page for stress on the suffix shows common suffixes that are stressed and allows users to click on words with that suffix to hear them (See Figure 21).

Figure 21. Stress on the suffix example screen.

Once users learn the stress patterns associated with particular suffixes in English, they then move to a practice exercise where users can click on example words, record their own pronunciation of the word and play back the recording to compare their recording to that of a native speaker of English (See Figure 22 on the next page).
After users practice the examples on this page (see Figure 22), they can click on the right arrow at the bottom of the screen to view more examples of stress one syllable before the suffix, stress two syllables before the suffix, and stress shifts between words.

Figure 22. Screen of suffixes practice exercise.

Once learners are finished with the suffix practice exercise, they are congratulated for finishing the word unit and are asked if they would like to continue to the sentence unit. If they agree to continue, then they will automatically go to the introduction page of the sentence unit.

Sentence Stress Unit

Introduction

The third and final unit in the program involves sentence stress. The sentence stress unit includes four sections: content vs. function words, stress-timing, contrastive stress and emphasis, and old vs. new information (See Figure 23 on the next page).
Each of the four sections begins with explanatory pages which describe how these sections (content vs. function words, stress-timing, contrastive stress and emphasis, and new and old information) influences sentence stress. When users click on the right arrow at the bottom of the screen, they will move to the content vs. function section.

**Content vs. Function Section**

The explanations for the content vs. function words provide information in an overview and specific topics of *content words* and *function words*. In English, not all words are stressed equally. For example, content words are usually stressed while function words are usually not stressed in a sentence. The explanations for content words and function words provide explicit rules for when words are stressed in a sentence. Figure 24 on the next page shows an example of information that users will see when the “Content words” option is chosen.
After users have learned about content words and function words and their appropriate stress patterns, they can then move to example sentences by clicking on the button that appears when the “Function words” option is chosen.
Figure 25 shows the content and function words examples. Users can click on each sentence to hear how it is pronounced by a native speaker of English. The content words that are more heavily stressed are in capital letters. I kept the sentence unit basic by only focusing on the primary stress placement and not secondary and tertiary stress.

Figure 25. Screen for content and function words examples.

Once the learners have seen the explanation and example exercises, they can then practice what they have learned in the practice exercise for content vs. function words. The practice exercise for the content vs. function asks users to click on the words in an example sentence that are content words. The words that users click are highlighted in grey (See Figure 26 on the next page.) When users are finished identifying all of the content words, they then click on the “Check Answer” button to check their answers. After checking the answers, a box appears that shows all of the correct content words in green (See Figure 27 on the next page).
Figure 26. Practice exercise screen for content vs. function with selected answers.

Figure 27. Practice exercise screen for content vs. function with feedback.
Once students have completed five questions for the content vs. function practice exercise, they are again asked if they would like to continue to the next section or keep practicing. If they choose to keep practicing, then they will be given another set of random practice questions. If they choose to continue to the next section, then they will move to the stress-timing section.

*Stress-Timing Section*

After learning about and identifying content words, users then receive information about stress-timing in English. Stress-Timing is presented by introducing explanations of *syllable-timing*, *stress-timing*, and how *English uses stress-timing*. Figure 28 is an example of how the page would first look when no options on the left are selected. When the options on the left are chosen, they will turn red and a white box will appear with the explanation.

Figure 28. Example of the explanation screen for stress-timing.
Each of the explanation options for stress-timing has different examples. Drawings are used in the syllable-timing and stress-timing examples to demonstrate the differences between syllable-timing and stress-timing (See Figures 29 and 30). In the syllable-timing example, the person is the same distance apart and the same size, indicating that everything often gets the same beat (See Figure 29).

Figure 29. Screen shot of the syllable-timing example.
In the stress-timing example, the people are not the same distance apart and the stress
does not have the same beat (See Figure 30).

Figure 30. Screen shot of stress-timing example.
After learning about stress-timing and seeing examples, users proceed to a practice exercise where they can click on a sentence to hear it and then record their speech into the microphone. Users practice saying sentences with just content words and then adding in function words. Each sentence appears separately when the learner clicks on the right arrow button at the bottom of the screen. Figure 31 shows how the screen would look when the learner is on the last sentence.

![Figure 31. Screen shot of stress-timing practice exercise.](image)

**Contrastive Stress and Emphasis**

The third section in the sentence unit deals with emphasis and contrastive stress. The content page for this section provides users with information concerning *contrastive stress, emphasis, and agreement*. Each of these options has opportunities for the users to view examples. The first contrastive stress example provides example sentences with contrastive information (See Figures 32 and 33 on the next page).
Figure 32. Screen shot of contrastive stress examples.

Figure 33. Screen shot of emphasis examples.
The examples for this section focus users on the principle of emphasis. Users learn how emphasizing a particular word in a sentence can shift the meaning of a sentence. Figure 33 on the previous page gives examples of sentences where the meaning changes depending on the word that receives emphasis. Users can click on each sentence and hear the emphasized word.

The practice exercise for the emphasis section provides sentences that users can listen to and then determine the appropriate meaning from a list of prepared choices. Users are again given a “Check Answer” button to see if their selection is correct (See Figure 34).

Figure 34. Screen shot of practice exercise for contrastive stress and emphasis.

Users can then use the right arrow at the bottom of the screen to move to new practice examples. After they have finished five questions, users have the option of continuing to the next section of new information or remaining and doing more practice.
Old and New Information Section

The fourth and final segment in the sentence stress unit teaches how sentence stress identifies new and old information in the discourse. The explanation discusses how old information and new information affect sentence stress. Figure 35 shows the explanation for new information.

Figure 35. Screen shot of old and new information section content page.

The example pages for old and new information are on the following page (See Figures 36 and 37). Users can click on each sentence to listen for old and new information. The new information in each example is distinguished by capital letters.
Figure 36. Screen shot of example page for old information.

Figure 37. Screen shot of example page for new information.
After reviewing examples of shifting sentence stress, users are then taken to a practice exercise where they can hear a dialog and click on those words that are emphasized indicating new and old information. Users can click on the box with the headset to the left of the dialog box to hear the entire dialogue, or they can click on the names of the people in the dialogue to only hear that line. Once users have clicked on the new information in the sentence, the words are blocked in grey (See Figure 38).

Figure 38. Practice exercise screen for new information with selected answers.

Once users have selected the words they think are stressed in each line, they can then click on the “Check Answer” button for feedback. The feedback the users receive is of two types. A dialog box appears below the practice dialog with the correct words highlighted in green and the incorrectly stressed words highlighted in red. A second box appears which provides users with an explanation regarding the color coding of the answers (See Figure 39 on the next page).
Figure 39. Practice exercise screen for new information with feedback.

Once users complete the practice exercise for the old and new information section, they are congratulated for completing the sentence unit and are asked if they want to return to the main menu.

Feedback regarding the piloting of the computer program is given in chapter six.
CHAPTER 5

PILOT STUDY DESCRIPTION

After developing the computerized pronunciation materials, the next step was to gather feedback from nonnative speakers of English regarding the program’s instructional content and ease of use. Since the purpose of the program was to provide self-access pronunciation materials for a SAC, I chose to pilot my materials with intermediate to advanced students attending BYU’s English Language Center (ELC) and who voluntarily participated in the study.

Pilot Design

In organizing the pilot, I determined that it would take approximately an hour and a half for students to review the entire module and complete the practice exercises. Knowing that it might be difficult to get volunteers to come for this length of time, I decided to organize three separate sessions (one for each unit – syllable, word, and sentence stress) during which one unit would be reviewed and users would also complete a brief survey that provided me with feedback regarding that unit. Time slots were identified on Wednesdays, at 10:45 am, 2:45 pm and 3:30 pm, which did not conflict with the ELC students’ class schedules. The sessions would also be held on consecutive Wednesdays from May 25 to June 1, 2005. Individual sessions were scheduled for 40 minutes and participants would be asked to attend all three sessions. Surveys were created to obtain feedback from the individual participants following each session. These surveys are given in appendices A, B, and C. Once surveys were prepared, questions were also created for a focus group to be held following the final session. (See Appendix D). It was determined that a focus group would allow participants to speak more freely
and not feel restricted to providing only written feedback. Once the feedback instruments and procedures were organized, permission to conduct the research was granted both by BYU’s Institutional Review Board (IRB) and the ELC’s Executive Council.

I advertised the pilot study by making flyers about the pronunciation instruction and posting them throughout the ELC six days prior to beginning the pilot study. I also delivered mini-flyers to the teachers for them to hand out to interested students in all of the listening/speaking classes at levels 3, 4, and 5. A sign-up sheet was put in the main office at the ELC for students to register for the sessions. Each time-slot sheet allowed fourteen students to sign-up. The restricted number was due to the number of PC computers available in the computer classroom.

The registration filled up in almost four hours which required me to offer three additional sessions, Wednesdays at 11:30 am, and Thursdays at 10:45 am and 11:30 am. The sessions were also held for three consecutive weeks. In the end, I had 70 students register to participate. There were no external incentives for participating in the study, although teachers at the ELC had the option of offering their students extra credit. As to my knowledge, this occurred on only a few occasions.

Methods

During the first thirty minutes of each session, students were encouraged to work through the unit of focus for the program with little or no help from the researcher. When they finished, they were asked to complete a brief survey which included some demographic information and responses from each participant regarding his or her reaction to the software program. The last 5-10 minutes of the session involved a group
discussion, and the researcher asked students certain open-ended questions about their experiences using the program. (See Appendix E).
CHAPTER 6

EVALUATION OF THE PROJECT

Demographics of the Participants

A total of 70 ELC students signed up to participate in the pilot program. The actual number of subjects who participated in each of the three sessions varied for each unit, comprising of 53 total students, none of whom I knew personally before beginning the study. Twenty-six students were female, 25 were male, and 2 had no response. All of the participants were students at the ELC in levels 3, 4, and 5. There were 21 students from level 3, or the Intermediate level, 20 participants from level 4, the high intermediate level, and 12 students from level 5, the advanced level. The age range of the participants was from 17 to 51 years old, with the mean age being 25 years old. Subjects who participated in the study and who responded to the item identifying native language spoke eight different languages (See Table 2). The average number of years that the subjects had studied English was 3 years and 6 months. And the average skill level of participants regarding their use of a computer, based on a five point scale of 1 (poor) to 5 (excellent) was 3.37, or within the “good” range.

Table 2.

<table>
<thead>
<tr>
<th>Native Language</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish</td>
<td>24</td>
</tr>
<tr>
<td>Korean</td>
<td>10</td>
</tr>
<tr>
<td>Japanese</td>
<td>6</td>
</tr>
<tr>
<td>Chinese</td>
<td>4</td>
</tr>
<tr>
<td>Portuguese</td>
<td>4</td>
</tr>
<tr>
<td>Mongolian</td>
<td>3</td>
</tr>
<tr>
<td>French</td>
<td>1</td>
</tr>
<tr>
<td>Russian</td>
<td>1</td>
</tr>
</tbody>
</table>
Survey Data

Surveys (see Appendices A, B, and C) were used to capture the participants’ feelings regarding the computerized pronunciation instruction and practice focused on stress in American English. The first seven items were aimed at gathering data from the participants regarding ease of use, level of enjoyment, clarity of directions, newness of knowledge, interest of practice exercises, understanding of examples, and desires to practice outside of the lab. The items asked participants to rate each comment on a four point Likert scale which ranged from strongly disagree (1) to strongly agree (4). The remaining 3 items on the survey (questions 8, 9, and 10) were open-ended questions which solicited individual feedback regarding what students liked and didn’t like about the unit, and what suggestions they had for making the unit better. Each of the three units included the same questions for the program survey. The following section will discuss the overall student responses for each unit.

Syllable Unit

Fifty students provided feedback regarding the syllable unit. Overall responses for the syllable unit were positive. The mean average for each of the items were at or slightly above the category “agree” (3) that the program was easy to use and had clear directions. Participants also agreed that they learned something that they didn’t already know and wanted to practice more outside of the lab. Student scores also implied that the practice exercises were interesting, the examples were helpful, and the program was pretty fun to do. The means and standard deviations for responses given regarding the syllable unit are found in Table 3 on the next page.
Table 3.

**Likert Scale Responses for Syllable Unit (N = 50)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The program was easy to use.</td>
<td>3.54</td>
<td>0.54</td>
</tr>
<tr>
<td>2</td>
<td>The program was fun to do.</td>
<td>2.95</td>
<td>0.61</td>
</tr>
<tr>
<td>3</td>
<td>The directions were clear and easy to follow.</td>
<td>3.31</td>
<td>0.66</td>
</tr>
<tr>
<td>4</td>
<td>I learned something that I didn't already know.</td>
<td>3.06</td>
<td>0.72</td>
</tr>
<tr>
<td>5</td>
<td>The practice exercises were interesting.</td>
<td>3.07</td>
<td>0.67</td>
</tr>
<tr>
<td>6</td>
<td>The examples helped me understand better.</td>
<td>3.30</td>
<td>0.68</td>
</tr>
<tr>
<td>7</td>
<td>I want to practice more outside of the lab.</td>
<td>3.28</td>
<td>0.70</td>
</tr>
</tbody>
</table>

The open-ended questions on the survey provided a bit more revealing data regarding students’ feelings about the syllable unit. In response to what they liked about the program, 18 students said they felt the program helped them with pronunciation and they liked listening to native speakers in the program. Nine students commented that they liked specific sections of the program in the syllable unit: reduced syllables (5), syllable stress (3), and syllable structure (1). When students commented about the sections that they liked during the discussion at the end of the session, I asked the students why they liked particular sections. Some students said that they liked the reduced section because it was more challenging. Others said they liked the syllable stress section, because they liked identifying where the primary stress occurred in individual words.

Seven responses included statements concerning the practice exercises and 6 commented on liking the examples. In the discussion at the end of the session, students who mentioned these elements in the program said that they enjoyed the practice exercises because they were able to apply what they had learned. Others said that they liked the examples the best, because it helped them understand the content. One participant wrote, “It always gave examples that helped me grasp how pronunciation is
performed.” Five comments included statements that the program was easy to understand. One student who studied linguistics in her native country wrote, “It tells about syllable stress in a very easy way, very easy to understand, I liked that it was about [what] basic theory thinks and examples to help you to understand it correctly.” Another student said that this program would be helpful for preparations with the TOEFL.

In responding to what they didn’t like about the syllable unit, students’ comments were focused into four main categories. The general responses were that the program was too short, too easy, a little bit boring, and overall approval towards the program. Nine responses referred to the instructional elements of the program as needing more explanation and examples. One student wrote, “I don’t see before anything about reduced and non reduced and if the objective of the program is teach too, and not just practice, it would be better for the explanation to be longer of the topics.” Five responses expressed concerns with the program being too easy and the need for more difficult questions. Three students said that the program was a little boring and not interesting to them. Although this question was designed to solicit negative comments, three other students offered positive approval of the program and said that all the sections were fine. One student wrote, “Nothing. I think it’s great.”

The final question on the survey asked for comments on ways to make this unit better. Fifteen of the responses said that they wanted more words to practice and examples. In my observations, I noticed that those students who wanted more words had also wanted to repeat and review the practice exercises more than once. This desire for more words in the practice exercises seems understandable, as sometimes only 10 different words were in the question pool for each exercise. Of these fifteen responses
about wanting more words, several students commented that they wanted more challenging words. In a discussion after one of the syllable sessions, students clarified the need to have more difficult words to mean words that were difficult to pronounce but were common in everyday language, such as “environment” or “pattern.” Five students wanted the vocabulary definitions to be included, or an option that would allow them to find the meaning of a word if they clicked on it. This need corresponds with my observation of several students using pocket dictionaries. Four students commented on the visual presentation of the program, including keeping what the students have read in the color red, having a bigger screen, and including a few pictures. One student wrote, “A few pictures could help our understanding.” Four other students expressed their approval of the program. One student wrote, “Maybe more questions will help more but in conclusion I think this program is awesome.” Another added, “Why don’t include [sic] this program as part of the curriculum? I think it’s a good idea.”

During the discussion at the end of the session, some students commented on how this program has reinforced the knowledge that they have been learning in some level 4 listening/speaking classes at the ELC, but other students in the same levels commented that they had never received training on stress in English. Consequently, this mixed feedback further emphasizes the challenge of pronunciation instruction at the ELC. Due to the high demands of course requirements in the listening and speaking classes and teachers’ opinions about including pronunciation instruction and exercises, students’ exposure to pronunciation really varies with the teacher. For those who had already studied syllable stress, the syllable unit was a review. For those who had not studied syllable stress, the material was new to them.
Word Unit

Thirty-two students provided feedback regarding the word unit. All of the students who participated in the word unit also participated in the syllable unit. Based on the student responses to the Likert scale and open-ended questions, students generally liked the word unit more than the syllable unit. The mean for each of the questions in the word unit was higher than the syllable unit, and on average, the students were in between “agree” and “strongly agree” in all of the seven areas: 1) The program was easy to use; 2) The program was fun to do; 3) The directions were clear and easy to follow; 4) I learned something that I didn’t already know; 5) the practice exercises were interesting; 6) The examples helped me understand better; and 7) I want to practice more outside of the lab. Table 4 shows the Likert scale responses for the word unit.

Table 4.

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The program was easy to use.</td>
<td>3.63</td>
<td>0.49</td>
</tr>
<tr>
<td>2</td>
<td>The program was fun to do.</td>
<td>3.22</td>
<td>0.61</td>
</tr>
<tr>
<td>3</td>
<td>The directions were clear and easy to follow.</td>
<td>3.50</td>
<td>0.51</td>
</tr>
<tr>
<td>4</td>
<td>I learned something that I didn't already know.</td>
<td>3.19</td>
<td>0.86</td>
</tr>
<tr>
<td>5</td>
<td>The practice exercises were interesting.</td>
<td>3.34</td>
<td>0.65</td>
</tr>
<tr>
<td>6</td>
<td>The examples helped me understand better.</td>
<td>3.44</td>
<td>0.56</td>
</tr>
<tr>
<td>7</td>
<td>I want to practice more outside of the lab.</td>
<td>3.50</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Students completed a similar survey to that of the syllable unit (See Appendix B) with the three same open-ended questions of what they liked, didn’t like, and suggestions for improvement. Overall feedback for the word unit was positive. Eighteen students commented on specific sections that they liked in the unit. Eight commented about liking the noun/verb contrasts section. One student wrote, “I learned about nouns and verbs
stress. This is really new for me. Thanks!” Six students commented that they liked the suffixes section; three commented that they liked the compounds section, and one response said the individual liked all of them. One student wrote about the compounds section, “compounds – same word, but accent in different place. If I understood, my English ability would improve.” Eight additional students commented that they liked recording their pronunciation and comparing it with the pronunciation of the native speaker on the computer. One student wrote, “I could compare my stress and pronunciation.” Five students commented that the program was practical and easy to follow and that they understood more about stress. One student said that their favorite part was “That I know something now that I didn’t know.” Five students commented that the practice exercises “required [their] concentration,” were “very easy to follow,” and were “very helpful.” One student wrote that his or her favorite part was “the way that the program makes the practice part easy and understandable.”

As with the syllable unit, the comments for what the students didn’t like were much less than what they liked about the word unit. Four students said that there were not enough words in the practice exercises. Four students expressed their approval that they liked the word unit. One comment was, “I liked everything.” Three students commented that they did not like the suffixes section because it had “a lot of explanation,” “was a little bit boring,” and it “didn’t help so much because it’s impossible to memorize.” Three students wrote that the directions for the suffix unit could be clearer and tell them to record one word at a time. One additional comment was that “some questions are easy” and another wrote that it was “sometimes boring because [it] is the same on Spanish.”

The main suggestion for improving the word unit (with 8 responses) was to have
more words in the practice exercise. Six other comments suggested making the program more interactive in the explanation and including graphics that “allow us to compare the given example vs. our pronunciation.” Five comments expressed their approval, such as, “Again, I think it is a great program” and “It’s helpful for correcting pronunciation.”

In a discussion after one of the sessions, two students told me that I should include the suffixes part as a separate unit because there was so much information included in that one section.

**Sentence Unit**

The mean score for all of the responses in the sentence unit were between “agree” (3) and “strongly agree” (4), suggesting that overall, the students liked this unit. The highest score with also the lowest standard deviation for this unit was that students wanted to practice more outside of the lab. All of the other responses were also very positive, with the next two highest being that the directions were clear and easy to follow and students learned something that they didn’t already know. Table 5 shows the Likert scale responses for the sentence unit.

<table>
<thead>
<tr>
<th>Table 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Likert Scale Responses for Sentence Unit (N = 25)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The program was easy to use.</td>
<td>3.48</td>
<td>0.51</td>
</tr>
<tr>
<td>2</td>
<td>The program was fun to do.</td>
<td>3.32</td>
<td>0.69</td>
</tr>
<tr>
<td>3</td>
<td>The directions were clear and easy to follow.</td>
<td>3.56</td>
<td>0.51</td>
</tr>
<tr>
<td>4</td>
<td>I learned something that I didn't already know.</td>
<td>3.52</td>
<td>0.59</td>
</tr>
<tr>
<td>5</td>
<td>The practice exercises were interesting.</td>
<td>3.40</td>
<td>0.65</td>
</tr>
<tr>
<td>6</td>
<td>The examples helped me understand better.</td>
<td>3.48</td>
<td>0.59</td>
</tr>
<tr>
<td>7</td>
<td>I want to practice more outside of the lab.</td>
<td>3.68</td>
<td>0.48</td>
</tr>
</tbody>
</table>
A similar survey as with the other units was given to the participants (See Appendix C), and students commented about what they liked in the sentence unit. Twelve responses explained that they liked how this unit helped them gain a new understanding about stress. One student commented, “It helped me learn a lot” and another said, “I learned more about the stress and I realized why the native speakers speak different.” Five students wrote that they liked the “applicable examples,” and another five said that the emphasis section was the most helpful section because the same sentence changes meaning, depending on where the stress placement occurs. Two students said that they liked the sentence unit more than the other units, and two other students commented that they liked “everything” and “it was interesting.”

The students wrote fewer comments about what they did not like. In fact, seven students did not have any complaints but rather expressed their approval. One student said, “I like everything. It was interesting.” Two students mentioned that they would like to have more practice, and one student said that “the explanations were good but a little boring.” One student said that she already knew the emphasis and new information sections because it was natural. Another said that he didn’t understand the drawings for the syllable-timing and stress-timing examples.

The most frequent suggestions for improvement to the sentence unit were consistent with that of the other units, with nine students expressing desires to have more practice sentences and examples. Four other responses expressed their approval of the unit. One concluded, “Sentence is the most important unit.” Two students suggested a button on the explanation pages that would allow users to listen to the explanation while they read. One person wrote, “I think that if you can listen and read the explanation at the
same time, it will maintain student focus.” Two other participants observed that the sentence unit “takes more time” and has “a lot of information in only one unit.” Another student wanted the definitions of words to be included and another suggested not capitalizing the stressed syllables in the emphasis practice, because students could simply know the right answer by looking at the capitalized words without listening to the sentence.

**Overall Program Evaluation**

In order to better understand student reactions to the overall program, student responses of all three units were averaged. All of the mean scores were between “agree” and “strongly agree.” (See Table 6). Based on the mean, the questions that scored from highest score to lowest include: the program was easy to use; I want to practice more outside of the lab; the directions were clear and easy to follow; the examples helped me understand better; the practice exercises were interesting; I learned something that I didn’t already know; and the program was fun to do. An interesting finding is that the standard deviation is higher for the lowest three questions, which implies the slightly higher discrepancies in the responses.

**Table 6.**

*Average Likert Scale Responses for Syllable, Word, and Sentence Units (N = 109)*

<table>
<thead>
<tr>
<th>Question</th>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The program was easy to use.</td>
<td>3.55</td>
<td>0.51</td>
</tr>
<tr>
<td>2</td>
<td>The program was fun to do.</td>
<td>3.16</td>
<td>0.64</td>
</tr>
<tr>
<td>3</td>
<td>The directions were clear and easy to follow.</td>
<td>3.46</td>
<td>0.56</td>
</tr>
<tr>
<td>4</td>
<td>I learned something that I didn't already know.</td>
<td>3.26</td>
<td>0.72</td>
</tr>
<tr>
<td>5</td>
<td>The practice exercises were interesting.</td>
<td>3.29</td>
<td>0.66</td>
</tr>
<tr>
<td>6</td>
<td>The examples helped me understand better.</td>
<td>3.41</td>
<td>0.61</td>
</tr>
<tr>
<td>7</td>
<td>I want to practice more outside of the lab.</td>
<td>3.49</td>
<td>0.58</td>
</tr>
</tbody>
</table>
Focus Group Data

In addition to averaging the total Likert scale responses for all of the units, I also conducted a focus group at the end of the sentence unit sessions in order to understand student reactions to the program. I generally asked the students 10 questions, which can be divided into four key areas: 1) why the students participated in the study; 2) what their favorite and least favorite units and parts were; 3) the role of autonomy that this program presented; and 4) the overall usefulness of the program.

Why students participated in the study

All of the responses from participants in the focus group said that the main reason why they had participated in this study was to improve their pronunciation. Some students were more specific by saying that they wanted to learn more about stress, but essentially all of the students who participated in the focus group were self-motivated to learn more about pronunciation instruction. This demonstrates the need and desire that students at the ELC have in improving their pronunciation.

Favorite Units and Parts of the Program

In order to evaluate student perceptions of the program, I asked them 1) which unit was their most favorite and why; 2) which unit was their least favorite and why; and 3) which parts in each of the units did they enjoy most (such as the content, examples, and practice) and why; and 4) what level of ELC would find this material most helpful and why.

Nearly all of the students except for one said that they liked the sentence unit the best because “Americans speak in sentences, they never speak in words” and the sentence unit was “more real, complete, and important.” One student observed that even though
the sentence unit was harder, the examples were clearer. The one student who disagreed with the others said that he liked the word unit the best, because he could understand everything and use it. This observation was interesting, as this student did the word and sentence unit on the same day, as opposed to doing the word unit the previous week. Some students said that they liked all of the units, but when I asked them to choose one in particular, all but one of them said that the sentence unit was the one they liked the most. One student suggested that the sentence unit ties everything together and said that students could “apply other things from the other classes to this one [sentence unit].” The students also agreed that their least favorite unit was the syllable unit. The reasons given were that it was “simple” and “not helpful” and contained “very easy words.”

The parts of the program that the students enjoyed the most varied. The majority of the students said that they liked the practice exercises the most and several commented that they particularly enjoyed the opportunity to record their voice and compare it with that on the computer. One student said that he liked the practice because “after I read it, I can see if I really understand” and another said, “Because practice makes perfect.” Some students preferred the examples, and others liked the examples with the explanation, because it helped everything come together and they could understand better.

The students had differing opinions for which level of the ELC that these materials would be most appropriate, but many of them agreed levels 3 (intermediate), 4 (high intermediate), or 5 (advanced). A couple of students said that level 3 would be appropriate, because they “start understanding more English and can notice how everything works” and other level 3 students said that this program would be appropriate for level 4, “because it is good and some words are difficult.” One student said level 2,
because students need to know this information earlier to help them with their pronunciation. The majority of the students agreed that intermediate and advanced students would most likely benefit from these materials.

Role of Autonomy

To better identify how the students perceived the role of autonomy, I asked them to tell me what they liked and didn’t like about being able to work at their own pace and how well the program allowed them to learn without help from a teacher. The learning styles and preferences for individuals seemed evident in how they viewed autonomy. Some students had trouble understanding the questions, but when I clarified them, they responded differently. Some students liked focusing on what they wanted to learn and said that it “was more interesting than class.” Other students said that they would prefer to have a teacher lead them, because one Asian student said, “if teacher leads us, it would be more concentrated, and we could have more time. The teacher would first explain, and then we could do the exercise.” Other students expressed the idea of working on their own, but also having a tutor to which they could ask questions. One student said that she liked both methods of having a teacher and being able to work at her own pace.

Usefulness of the Program

In order to understand the usefulness of the program, I asked the students if they thought this program would help others learning English at the ELC or in their native country; if they would like to see other programs developed that focus on other elements of pronunciation, such as intonation, rhythm, and pausing; and if these sessions were worthwhile to them personally.
All of the students who responded to this question in the focus group responded affirmatively to each of these questions. They said that their native country could use this program because “it’s easy, and you don’t have to know about the computer” and that it would be “helpful for every country.” One student observed that “non-native speakers don’t know stress well” and commented that in his country, they have the explanation of similar content, “but this is better.” All of the students agreed that they would like to do more programs that are similar to this one, and one group said that if they had to decide, they would probably want intonation before any of the other suprasegmental elements. The students also agreed that the sessions were worthwhile to them personally, and that they “enjoyed it,” “learned new things,” and that some of the information that they learned (especially with emphasis) will help them prepare for the TOEFL.

Summary

In conclusion, these materials seem very beneficial to students who are interested in learning more about stress in American English. Overall, the participants responded positively to the program in their comments and Likert scale survey evaluations. Although this program is not perfect, the goals and objectives of raising-consciousness in the learners and providing additional opportunities for practice appeared to be achieved.
CHAPTER 7

CONCLUSION

The purpose behind the development of *Pronunciation Progress: Stress in American English* was to create a self-access computerized pronunciation module designed to help NNSs of English to learn and practice elements of stress in American English. These materials were designed to allow students to work at their own pace with little or no help from a teacher. Based on feedback from 53 English language learners in the pilot study, these materials achieved their objectives. While it received a lower mean score, students still agreed that they learned new information that they did not already know and they were able to navigate through the content at their own pace. While the feedback showed that many learners liked the flexibility offered by the self-access computerized format, some students still preferred the involvement of a teacher.

Summary of Student Feedback

Using a four point Likert scale which ranged from strongly disagree (1) to strongly agree (4), participants were asked to rate ease of use, level of enjoyment, and clarity of directions. Participants also rated the degree to which they learned something they didn’t already know, if the practice exercises were interesting, if the examples help them understand the principles taught and if they wanted more practice outside the lab. In general, students were quite positive about the overall use and helpfulness of the materials. The mean scores for all three units were between 3.0 and 4.0 on the Likert scale. The word stress unit received the highest overall mean scores, which seems to indicate that students liked all sections in the word unit as opposed to just having one or
two favorite sections. Student responses to open-ended questions for the word unit also imply that many students liked all of the sections.

Even with the overall positive feedback, it was interesting to see the students’ preferences for different units and sections of the program. In the open-ended comments, some students wrote that their favorite part was one section, while other students wrote that the same section was their least favorite part. Other students said that one particular section was more difficult, while different students said that the same section was easy. Some students said that sections in the program were a review to them, while others said that the same sections in the program were new information to them. This feedback seems to correspond with the purpose of the program, which is to provide users with flexibility in working through the various units. If users begin the syllable stress unit and find that they are familiar with this content and can do the practice exercises with relative ease, they then have the option of leaving this unit and proceeding to another unit. Learners at different levels can focus on what they want to learn. The program also allows users to exit the program and re-enter at another time without starting the program with unit one.

Suggestions for Enhancing Materials

Based on the student responses during the pilot study, I received helpful feedback regarding the program. Students found the layout and design of the computer program easy to use. Students did not seem to have problems navigating through the materials. This observation is confirmed by the high rating students give on the ease of use item (3.55). In the comments section, only two students suggested potential changes in the layout. The first student suggested that the bullet points on the content screen remain
highlighted in red if they have already viewed the information associated with them.

Another student recommended that I put a label on the right arrow button of the content pages to read something like “go to practice exercise.” This feedback was especially helpful as I noticed that some students would navigate using the menu bar at the top of each unit, consequently skipping the practice exercises, instead of using the navigation arrows at the bottom of the screen. Clearer directions on the content page may also highlight the option of clicking on the right arrow to go to the practice exercise. Overall, students with even minimal computer skills seemed to understand the navigation, and no one complained about the main color schemes and program design.

The most frequent suggestion from students in the pilot study was the need for the program to include additional questions in the practice exercises. Since the random question pool only contained about 10 questions and students received 5 of the 10 questions, students seemed frustrated when they wanted additional practice but would receive repeated practice questions that had appeared previously. Repeating questions occasionally in the practice can be beneficial, but can also be very frustrating if the questions seldom change. One way to remedy part of this problem would be to include a much larger question pool (perhaps one hundred questions as opposed to just ten for each practice exercise). In this way, the chance of receiving the same random practice question would be much less.

Another common suggestion was to include the definitions of the words used in the practice exercises in the program. Although students were not clear in their comments about their desire to understand some of the vocabulary in the program, I am assuming that their comments imply that an imbedded glossary would be helpful. A solution for
this need could be to include a button on each page where the learner could click to be connected to a dictionary website where they could look up words that they do not understand. This link would provide learners with an additional resource to aid them in their self-directed study. Another option would be to create an initial glossary with some of the key words that affect meaning and provide the learner with some opportunity of clicking on the word that they do not understand and referencing the word in the glossary. This latter option may be more difficult to program since many words in the program are currently linked to audio files so students can hear their pronunciation. While the purpose of this program was primarily to teach stress and not vocabulary, providing students with some way of learning new vocabulary could help integrate this program into other skill areas and aid students in comprehending the information better.

Another suggestion, based on the mean scores of the Likert scales responses for question 2, could be to make the units a little more fun to do. This could include adding more variety to the program without jeopardizing its ease of use. Some future enhancements could be to add characters that guide learners through the units in a more humorous or creative way, change some of the graphical design of the units, or vary the wording of the feedback that is given to the students to include statements such as, “Great job!” or “Almost there. Try one more time.”

Other suggestions for enhancements to the program included creating practice exercises at different degrees of difficulty. Participants expressed a desire to choose the level of difficulty of the practice questions. In the evaluation session, I asked some of the participants if they would like to have three buttons that would take them to practice sets that were beginning, intermediate, and advanced level questions. The students responded
favorably to this idea. Some students also suggested having the questions get increasingly harder if learners were correct on the first try. An additional enhancement to the content aspect of the program was having a button with the option for students to listen to the explanation while reading it. One student suggested that this would help the program to be a little more interactive. Another student said that incorporating more graphics, such as a picture of the mouth with correct tongue placement, would help the program be more interesting for him. While I agree that graphics enhance any program, the question remains as to what types of graphics might be most appropriate to include in a program focusing on stress. Pictures of the mouth, for example, seem more helpful and appropriate when explaining segmental features where there are specific place and manner of articulation for each sound. These pictures would not be appropriate for suprasegmentals since stress is not something visible from a mouth diagram.

Students expressed a keen interest in being able to record their voice and compare it with the native speaker on the computer. This option could be expanded to every example screen. When I asked students about this idea, some really liked it and said that it would enhance the program and make it a lot more interesting, while others preferred the program to be the way it is right now, with only two practice exercises having this option. One student’s reasons behind not wanting the recording option on all of the example pages was that it could lose its effect of being interesting and the program would take much longer to complete.

Limitations

Developing a computerized pronunciation program was an enormous undertaking for someone with limited computer experience and programming background. In the
course of a year’s time and thousands of hours of work, I am happy with the program that was created. I still recognize that there is more development that can be done, but this will take additional time and more programming experience.

Another limitation to this project is the capabilities of the software program, Revolution®. I chose this program because of its usefulness for beginning programmers and the classes available at BYU that taught this programming language. Revolution® is designed to be instructional software and therefore has capabilities of creating buttons and other objects that are easier to program than in other computer languages. However, it does not have all the technological capabilities that a pronunciation instructional program could offer, such as the capacity to allow users to actually see representations of the sound wave forms of speech, including levels of intensity, loudness, and pitch. One student commented that he would like this feature, but Revolution currently does not have this capability.

A third limitation for this project was the implications of self-access and autonomy. While the purpose was to design a program for self-access study, some students’ comments indicated their preference was still to learn in a traditional classroom with a teacher. One reason for this could be cultural differences (Benson, 2001). I noticed that some Asian students made comments that they did not understand the purpose of this program and that they preferred to have a teacher teach them the elements of pronunciation that they needed to know. This attitude towards learning could be in part because the traditional role of the teacher is very important in Asian culture (DeCapua and Wintergerst, 2004). Another reason for preferring a traditional classroom with a teacher could be that some students feel uncomfortable with their computer skills. The
mean score on the Likert 5 point scale of how students felt their computer skills were was “good” range (3.38). However, the range for student responses were from 1 (poor) to 5 (excellent) with a high standard deviation of 1.04. Some students may feel more relaxed in a classroom setting as opposed to a computer lab setting.

A fourth limitation of the project involves the research design for how the data was gathered in the pilot study. My objective in creating three different practice and feedback sessions was to focus on one unit at a time and receive specific feedback regarding that unit. Organizing 45 minute sessions I felt would also keep students from getting too tired. My design included challenges. First, my intent was to register a group of students that would come once a week for three consecutive weeks. While many students did come for all three weeks, some students only came for one session. I had to spend time each week sending notes to students in their ELC classroom reminding them to come. Many students were excited to come for the first session, but they may have been discouraged if the material covered in unit one, syllable stress, was material they were already familiar with. In the subsequent two sessions, I had 32 students attend the second week and 25 students attend the third week. This attrition each week could have slightly skewed the data in the word and sentence units, as perhaps only the highly motivated students and those who liked the program came back to the last two sessions.

A fifth limitation involved the feedback gathered during the focus group. At the end of the third session (sentence stress unit), a focus group was held during which users were asked to comment on items they liked in each of the three units. Most of the students’ comments centered on items they liked from the sentence unit more than the other units. This could be because they genuinely liked the sentence unit more, or they
had forgotten about the syllable and word units. One student who did the word and sentence unit on the same day (since he forgot to attend the word session), was the only one who said he liked the word unit the best. His preference towards the word unit could have been because of his immediate exposure and that he remembered the word unit more than the other students.

In retrospect, I would probably change the pilot study to more closely match the objectives of the program. A change in the design would allow students to come for 1 hour 20 minutes during which they could work through all of the units at their leisure and then take the last 20 minutes to collect feedback regarding the content and practice exercises in the various units. In this way, users could see the entire program and work on those sections most relevant to their needs. Students would also be able to immediately compare one unit with another. Even though the students may get a little tired, the overall program feedback could be very beneficial, as students would have had immediate exposure to all of the units. Also, students may not get as tired as I had originally anticipated, because I observed them working through the units faster than I expected. In the pilot, I would still ask for individual feedback with each survey and would conduct a focus session to compare how the participants felt about all of the units in order to gain an even more accurate understanding of the overall program.

Future Project Development

The creation of this computerized pronunciation program I feel is just the beginning. In this program, I chose to focus on one suprasegmental, stress. Additional programs could be created that are focused on other suprasegmentals, such as intonation, thought groups, linking, and rhythm. Participants of the pilot study agreed that additional
programs would be helpful to assist them with their pronunciation, or comprehensibility. In addition, several students commented on how this program could benefit people in their native countries and other countries throughout the world.

I have not included the actual computer program with the written description because I am preparing the program for potential commercial distribution. However, through the development and evaluation of this project, I have more fully understood the great needs and desires that learners have to improve their pronunciation and comprehensibility of the English language. The actual effectiveness of these materials is yet to be tested, as I did not conduct a pre and post test, but merely evaluated student reactions to the program. However, based on the participants’ responses, users did find this computer program to be beneficial to them personally. While materials and research for teaching pronunciation in a self-access setting are still limited (Morley, 1991; Pennington, 1999), hopefully this project gives enthusiasm and encouragement to future materials developers that computer-aided pronunciation materials can become an exciting reality.
REFERENCES


Appendix A: survey instrument for session 1

Session 1: Syllable Unit

Date: ___________________    Time: ___________________

Consent to be a research subject

The purpose of this research study is to gather information about the effectiveness of the computer program entitled, *Pronunciation Progress: Stress in American English*. The research is being conducted by Ann-Marie Bott, a graduate student in Teaching English to Speakers of Other Languages (TESOL), at Brigham Young University. You were selected because you are a non-native English speaker with a proficiency of at least an intermediate to advanced level of English.

You are asked to participate in three sessions of about 40 – 45 minutes each. In each session, you will use the computer program and then complete a brief survey. Following the survey, the researcher will ask several questions relating to the material. At the end of the third session, the researcher will conduct a focus group that will be tape recorded. The tapes will be destroyed after the research is analyzed. The results will help the program developer and staff at the ELC and BYU understand how to make the program better.

There are no known risks to you for participation in this study. Your participation, however, could help improve this computer program. Participation is voluntary. You have the right to refuse to participate and the right to withdraw later without penalty. Strict confidentiality will be maintained.

If you have questions regarding this research, you may contact Ann-Marie Bott by phone at (801) 763-5537 or by email at ak7@email.byu.edu. If you have questions regarding your rights as a participant in a research project you may contact Dr. Renea Beckstrand, Chair of the Institutional Review Board, 422 SWKT, Brigham Young University, Provo, UT 84602; renea_beckstrand@byu.edu phone (801) 422-3873. By returning this survey, you agree to participate in this research and allow the researcher to use the related information of this research.

Background Information

1. Date of Birth: _____/_____/______    2. Gender (circle one)    Male    Female
   (month)(day)(year)

3. Level at the ELC (circle one)    level 3    level 4    level 5

4. What is your native country? __________________    Native Language: __________

5. Other languages spoken (besides English and native language): __________________

6. How long have you studied English? ________ year(s) ________ month(s)
7. How would you describe your skill level at using a computer? (circle one)

1 (poor)  2 (fair)  3 (good)  4 (very good)  5 (excellent)

*Program Survey*

*Please answer each question as honestly as you can.*
*Tell whether or not you agree or disagree with the sentence. (Circle one for each)*

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The program was easy to use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. The program was fun to do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. The directions were clear and easy to follow.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. I learned something that I didn’t already know.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. The practice exercises were interesting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. The examples helped me understand better.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. I want to practice more outside of the lab.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

*Please answer these questions.*

8. Overall, what I liked about the syllable stress unit was …

9. Overall, what I didn’t like about the syllable stress unit was …

10. Additional comments on how to make this unit better …
Appendix B: survey instrument for session 2

Session 2: Word Unit

Date: _________________    Time: _________________

Consent to be a research subject

The purpose of this research study is to gather information about the effectiveness of the computer program entitled, *Pronunciation Progress: Stress in American English*. The research is being conducted by Ann-Marie Bott, a graduate student in Teaching English to Speakers of Other Languages (TESOL), at Brigham Young University. You were selected because you are a non-native English speaker with a proficiency of at least an intermediate to advanced level of English.

You are asked to participate in three sessions of about 40 – 45 minutes each. In each session, you will use the computer program and then complete a brief survey. Following the survey, the researcher will ask several questions relating to the material. At the end of the third session, the researcher will conduct a focus group that will be tape recorded. The tapes will be destroyed after the research is analyzed. The results will help the program developer and staff at the ELC and BYU understand how to make the program better.

There are no known risks to you for participation in this study. Your participation, however, could help improve this computer program. Participation is voluntary. You have the right to refuse to participate and the right to withdraw later without penalty. Strict confidentiality will be maintained.

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Background Information

1. Date of Birth: _____/____/_____ (month)(day)(year)
2. Gender (circle one)    Male    Female
3. Level at the ELC (circle one)    level 3    level 4    level 5
4. What is your native country? ________________    Native Language: ________________
5. Other languages spoken (besides English and native language): ________________
6. How long have you studied English? ________ year(s) ________ month(s)
7. How would you describe your skill level at using a computer? (circle one)

<table>
<thead>
<tr>
<th></th>
<th>1 (poor)</th>
<th>2 (fair)</th>
<th>3 (good)</th>
<th>4 (very good)</th>
<th>5 (excellent)</th>
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<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

8. Did you participate in a previous session?   Yes    No

If yes, circle all the sessions that apply.  Syllable Unit

**Program Survey**

*Please answer each question as honestly as you can.*

Tell whether or not you agree or disagree with the sentence. (Circle one for each)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The program was easy to use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. The program was fun to do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. The directions were clear and easy to follow.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. I learned something that I didn’t already know.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. The practice exercises were interesting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. The examples helped me understand better.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. I want to practice more outside of the lab.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

*Please answer these questions.*

8. Overall, what I liked about the word stress unit was …

9. Overall, what I didn’t like about the word stress unit was …

10. Additional comments on how to make this unit better …
Appendix C: survey instrument for session 3

Session 3: Sentence Unit

Date:_________________    Time:_________________

Consent to be a research subject

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Background Information

1. Date of Birth: _____ / ____ / _____ (month)(day)(year)
2. Gender (circle one) Male Female
3. Level at the ELC (circle one) level 3 level 4 level 5
4. What is your native country? ________________ Native Language: _____________
5. Other languages spoken (besides English and native language): ________________
6. How long have you studied English? ________ year(s) ________ month(s)
7. How would you describe your skill level at using a computer? (circle one)

<table>
<thead>
<tr>
<th></th>
<th>1 (poor)</th>
<th>2 (fair)</th>
<th>3 (good)</th>
<th>4 (very good)</th>
<th>5 (excellent)</th>
</tr>
</thead>
</table>

8. Did you participate in a previous session?   Yes  No

If yes, circle all the sessions that apply.     Syllable Unit  Word Unit

**Program Survey**

*Please answer each question as honestly as you can.*

Tell whether or not you agree or disagree with the sentence. (Circle one for each)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

1. The program was easy to use.  
   1 2 3 4

2. The program was fun to do.  
   1 2 3 4

3. The directions were clear and easy to follow.  
   1 2 3 4

4. I learned something that I didn’t already know.  
   1 2 3 4

5. The practice exercises were interesting.  
   1 2 3 4

6. The examples helped me understand better.  
   1 2 3 4

7. I want to practice more outside of the lab.  
   1 2 3 4

*Please answer these questions.*

8. Overall, what I liked about the sentence stress unit was …

9. Overall, what I didn’t like about the sentence stress unit was …

10. Additional comments on how to make this unit better …
Appendix D: focus group questions

*Focus Group Questions (at the end of session 3)  Time: ________________*

1. Why did you participate in this study?

2. Which unit was your most favorite? Why?

3. Which unit was your least favorite? Why?

4. Which parts did you enjoy the most (content, examples, practice) and why?

5. What level of ELC student would find this material most helpful? Why?

6. Talk to me about how you liked or disliked being able to work at your own pace.

7. This program is designed to be used without help from a teacher. How well do you feel this program allows you to do this?

8. Do you think that this program could help others you know learning English (i.e. in the ELC or in your native country)? Why or why not?

9. Would you like to see other programs developed that focus on other elements of pronunciation? (i.e. intonation, thought groups/pausing, rhythm)

10. Were these sessions worthwhile to you personally?
Appendix E: discussion questions

Session: __________

Date: ________________________  Time: ________________________

Some of the open-ended questions for discussion

Did you have any errors? If so, please explain what types of errors.

What types of practice exercises were most helpful?

How helpful was the feedback for each practice item?

How clear and easy to follow were the explanations and examples?

What was your favorite part? Why?

What changes would you suggest?