Teaching Pronunciation

Using the Prosody Pyramid

Judy B. Gilbert

Table of Contents

Introduction

Teaching pronunciation involves a variety of challenges. To begin with, teachers often find that they do not have enough time in class to give proper attention to this aspect of English instruction. When they do find the time to address pronunciation, the instruction often amounts to the presentation and practice of a series of tedious and seemingly unrelated topics. Drilling sounds over and over again (e.g., minimal pair work) often leads to discouraging results, and discouraged students and teachers end up wanting to avoid pronunciation altogether.

There are also psychological factors that affect the learning of pronunciation in ways that are not so true of studying grammar or vocabulary. For one thing, the most basic elements of speaking are deeply personal. Our sense of self and community are bound up in the speech-rhythms of our first language (L1). These rhythms were learned in the first year of life and are deeply rooted in the minds of students. Therefore, it is common for students to feel uneasy when they hear themselves speak with the rhythm of a second language (L2). They find that they "sound foreign" to themselves, and this is troubling for them. Although the uneasiness is usually unconscious, it can be a major barrier to improved intelligibility in the L2.

A teacher can help overcome this psychological barrier and other challenges by thinking of the goal of pronunciation instruction not as helping students to sound like native speakers but as helping them to learn the core elements of spoken English so that they can be easily understood by others. In other words, teachers and students can overcome the frustrations, difficulties, and boredom often associated with pronunciation by focusing their attention on the development of pronunciation that is "listener friendly." After all, English pronunciation does not amount to mastery of a list of sounds or isolated words. Instead, it amounts to learning and practicing the specifically English way of making a speaker's thoughts easy to follow.

This booklet presents an approach to pronunciation that highlights the interrelatedness of various aspects of English speech. The approach addresses the individual elements of pronunciation but always within the framework of a larger system that uses all these individual elements to make speakers' ideas clear and understandable to their listeners.

1 | *The Functions of Prosody*

Communication in spoken English is organized by "musical signals." There are two aspects to these signals – rhythm and melody – and the combination of these two aspects may be called *prosody*. Often, the term *prosody* is used to mean rhythm alone, while the term *intonation* is used to refer specifically to melody (or pitch patterns). However, in this booklet, *prosody* will refer to the combination of both rhythm and melody. The reason is that for the purposes of teaching pronunciation, the teacher needs to understand that both these aspects of spoken English work together and are vitally linked. The term *prosody* provides us with a handy way to refer to the interconnected aspects of rhythm and melody with a single label.

Rhythm and Melody as Road Signs

In English, rhythmic and melodic signals serve as "road signs" to help the listener follow the intentions of the speaker. These signals communicate emphasis and make clear the relationship between ideas so that listeners can readily identify these relationships and understand the speaker's meaning. Unfortunately, when English learners speak in class, they are typically not thinking about how to help their listeners follow their meaning. Instead, they are often thinking about avoiding mistakes in grammar, vocabulary, and so on. Native speakers also commonly make this error when delivering a presentation or when reading aloud in a classroom, a business meeting, or in some other setting. They become preoccupied with making "mistakes" and may ignore their listeners altogether. But it is particularly important for English learners to think about their listeners and master the rhythmic and melodic signals essential to "listener-friendly" pronunciation.

Learners typically do not use or recognize the cues that native listeners count on to help them follow meaning in a conversation. As a result, conversational breakdowns occur. Emphasis that conveys the wrong meaning, or thought groups that either run together or break in inappropriate places, cause extra work for the listener who is trying to follow the speaker's meaning. If the burden becomes too great, the listener simply stops listening. The principle of "helping the listener to follow," therefore, is a vital one. It is so central to communication, in fact, that time spent helping students concentrate on the major rhythmic and melodic signals of English is more important than any other efforts to improve their pronunciation.

Melody

All languages have some way to highlight the most important piece of information in an utterance. They all have a way to help listeners distinguish between old information and new information and thereby draw the listener's attention to that piece of information that is new, and therefore, more important. But few languages rely on melody for this function as much as English. In English, changes in pitch help listeners follow the speaker's meaning because these melodic signals provide cohesion and contrast. Not only do they tell listeners what is new information, but they also tell listeners how ideas relate to each other. They help listeners to understand how the speaker intends to make connections with what came before (orientation) and what will follow in the conversation (prediction).

Efficient listening comprehension, therefore, depends on the ability to "read" melodic cues in order to sort out these aspects of the incoming language. The orientation aspect helps listeners to clue into what must have been assumed, and the prediction aspect helps listeners to find out quickly if they have misunderstood the point of the conversation. In addition, these aspects are similar to the skills needed to be an efficient reader (e.g., to recognize the significance of *furthermore* or *on the other hand* which are "road signs" for the reader). But in spoken English, the "road signs" are prosodic!

Consider the following example sentences.

Example

a. Jane said, "Is that Mister Fogg?"
b. Jane said, "Is that mist or fog?"
Question: What was Jane talking about?
(Gilbert 2005, 136)

In sentence (a), Jane is asking about a person. In sentence (b), she is asking about something altogether different, the weather. In terms of pronunciation, however, the only difference between the two utterances is a melodic one. The pitch pattern of each sentence distinguishes it from the other and makes the meaning clear for the listener.

Rhythm

Children learn the rhythm of their L1 very early in life. By the time they reach the age of one, that rhythm is deeply familiar to them, and they will unconsciously apply it to any L2 that they learn (Aoyama et al. 2007). Since English learners will be predisposed to use the rhythm of their L1, it is highly important that they be made consciously aware of the English system of rhythm.

The basic unit of English rhythm is the *syllable*. A syllable is most simply explained as something with a vowel sound at its center. And while the number of syllables in a word is usually obvious to a native speaker of English, learners accustomed to different phonological rules may not hear the syllable divisions in the same way. Since this seriously affects both intelligibility and listening comprehension, time must be spent training students' ears to notice the number of syllables in the words they learn. For instance, students should be taught to count syllables and thereby notice the rhythmic difference between words in pairs, such as *ease* and *easy*, or *wait* and *waited*.

Notice in the picture of a school bus in Malaysia below that the English word *school* has been re-syllabified to fit the Bahasa Malaysia language (sekolah), which does not allow a final /l/ sound. That is to say, the word has been transformed into 3 syllables, rather than the English version, which is one syllable. Another common source of added syllables is that consonant clusters are not allowed in many languages and yet occur very often in English. This can cause systematic errors in pronunciation based on the student's L1 rules (e.g., *eschool* or *estudent*, or even *Espanish* for Spanish) and can also cause confusion (e.g., *parade* instead of *prayed*, and *forest* instead of *first*).

Figure 1: School Bus in Bahasa Malaysia language

Listening comprehension is increased when students learn to notice the rhythmic effect of the number of syllables, including small words such as articles, auxiliaries, and affixes (e.g., the; do; -er; etc.). In easily confused words like *this is/this* and *late/later* the number of syllables is different, so the rhythm is different. These small words and affixes are typically difficult to hear in spoken English because of the systematic use of contrastive highlighting/obscuring, which is essential to the English stress and emphasis system. For this reason, these small words are often missing from students' speech (and writing), and this indicates that they are not hearing them well.

1. Yest'day I rent' 'car. (Yesterday I rented a car.)

2. Where' 'book? (Where is the book?)

3. We' been here' long time. (We've been here a long time.)

But an understanding of English rhythm involves more than the ability to identify and count syllables. It also involves an ability to hear and produce the *word stress patterns* of English.

English speakers tend to store vocabulary items according to their stress patterns (Brown 1990; Levelt 1989). Therefore a stress error is particularly damaging to communication. Brown puts it this way:

> *The stress pattern of a polysyllabic word is a very important identifying feature of the word . . . We store words under stress patterns . . . and we find it difficult to interpret an utterance in which a word is pronounced with the wrong stress pattern – we begin to "look up" possible words under this wrong stress pattern.* (1990, 51)

Only a little imagination is needed to realize that the failure to hear and produce stress patterns accurately could cause confusion between words such as those in the following pairs:

dessert/desert   foreign/for rain   his story/history

It might seem that context would clarify any confusion over words like these, but in fact stress errors rarely exist in isolation from other pronunciation or grammatical problems. The combination of stress errors with other types of errors can seriously disrupt communication. For example, the following instance of confusion actually occurred during an English language learning class in the workplace, when a student took the teacher aside and asked for private advice.

Student: Mrs. Stiebel, can you help me with comedy?

Teacher: Comedy?

Student: Yes, comedy is <u>big</u> problem.

Teacher: I don't quite follow.

Student: (Patiently) Problem – this is <u>worry</u>.

Teacher: Yes, a worry. Um . . . you mean you have a
    problem with comedy on TV?

Student: TV? (Trying again) The boss put me on
    department comedy. Everybody on comedy, all the
    time argue.

Teacher: Oh, you mean <u>committee</u>!

Student: Yes, what I told you, comedy.

Although good will and patient attempts to clarify may often help speakers and listeners overcome this sort of disruption, wrong stress is an added burden for listeners and can, in many cases, lead to conversational breakdown.

Unfortunately, learners tend to ignore stress patterns when they learn vocabulary. Not only can this lead to pronunciation problems, as in the example above, but it can also lead to problems with comprehension. After all, if learners have failed to learn the stress pattern for a new word, they may also fail to recognize that word when it occurs in spoken form. Brown makes this observation:

> *From the point of view of the comprehension of spoken English, the ability to identify stressed syllables and make intelligent guesses about the content of the message from this information is absolutely essential.* (1977, 52)

The importance of prosodic instruction is further supported by the findings of Derwing and Rossiter. In 2003, they conducted a study on the effects of different types of English pronunciation instruction. As part of that study, a group of students was instructed in segmentals (i.e., individual consonant and vowel sounds). They were taught to distinguish between English sounds and produce these sounds as accurately as possible. Another group was primarily taught the prosodic features of English. They learned about the rhythm and melody of English and practiced using the prosodic signals that native speakers use to guide their listeners. The authors comment on their findings:

> *We do not advocate eliminating segment-based instruction altogether, but, if the goal of pronunciation teaching is to help students become more understandable, then this study suggests that it should include a stronger emphasis on prosody.* (2003, 14)

The Relationship Between Speaking and Listening Comprehension

While it may be easy to see the benefit of good pronunciation instruction for increasing intelligibility, it is just as useful for increasing listening comprehension. Students who are taught about English prosodic patterns often report improved understanding of speech on TV, in movies, and in face-to-face conversation. Why is this?

One reason is that prosodically-trained students have learned to understand how rhythmic and melodic cues are used to organize information and guide the listener. Another reason is that these students have learned to notice how prosody changes how words sound. Most English learners who suffer from inadequate training in listening comprehension complain that "native speakers talk too fast." What this often means is that learners are unable to process important grammatical signals, (e.g., past tense markers) or effectively process contracted speech. Contractions and reductions are a normal part of

spoken English. Furthermore, difficulty keeping up with what was said also occurs from the inability to recognize the intonational signals of "what goes with what" or "what disagrees with what." These signals are an important part of helping the listener to follow (i.e., creating cohesion). An example of missing the signals of grouping would be failing to recognize who is being spoken about in a remark like "John," said the Boss, "is lazy." This is a quite different sentence than "John said, 'The Boss is lazy'." Aside from intonational thought grouping signals, another reason to miss the point of what the speaker just said is the inability to recognize the implications of emphasis. Emphasis signals what is new, or especially important, as opposed to what is already understood. Cohesion in English conversation depends both on signals of grouping and on the pitch contrast between new information and old information.

A dramatic example of "not noticing the implications of emphasis" occurred at a major point in Francis Coppola's detective movie "The Conversation." The detective thinks he heard the beautiful young wife say to her lover "If my husband finds out, he'll KILL us!" The detective is so worried about the young woman's safety from her jealous husband that he misinterprets the remark. But later, after the husband's corpse is discovered, and a small smile is seen on the wife's face, the detective realizes he had misheard the emphasis. What she had actually said was "If my husband finds out, HE'LL kill US." The emphasis on pronouns implied something far different from the usual emphasis on a content word (the verb). The two young lovers were not afraid of the husband; they were plotting a murder.

The individual sounds of spoken English are constantly changed by the communication pressures inherent in the prosody. Put another way, prosody often distorts sounds so much that they are unrecognizable from the sounds of a word when it is said in isolation. For example, to find out how a word is pronounced a learner will often look in a dictionary. But it is important to realize that actual pronunciation of that word may be dramatically changed depending on its importance to the speaker at a particular moment. In actual speech, words run together, consonants or vowels disappear or change in sounds all in relation to the prosody pressures. Also, the word stress pattern as indicated in the dictionary is actually only a "potential" stress pattern; the potential is activated in specific contexts, but it is not necessarily realized in every context. So if students depend on the "dictionary pronunciation" of words, they will likely fail to recognize a spoken vocabulary item when they hear it, even though they "know" the item in print. In fact, they do not really know the word until they can identify it in actual speech.

Brown explains the problem this way:

> *From the point of view of understanding ordinary spoken English, the failure to move beyond the basic elementary pronunciation of spoken English must be regarded as disastrous for any student who wants to*

be able to cope with a native English situation. If the student is only exposed to carefully articulated English, he will have learnt to rely on acoustic signals which will be denied him when he encounters the normal English of native speakers. (1977, 159)

Her point, at least in part, is that the individual sounds of words are affected by the surrounding language, and often are said quite differently than an English learner depending on the dictionary would expect. For this reason, effective listening comprehension is greatly enhanced by learning (through explanation and adequate practice) how the sounds actually change according to the prosodic influence of the speaker's intentions. The focus of English pronunciation instruction, therefore, should be to give learners the prosodic framework within which the sounds are organized. Instruction should concentrate on the way English speakers depend on rhythm and melody to organize thoughts, highlight important words, and otherwise guide their listener.

In addition to helping learners understand words in context and to recognize prosodic "road signs" in spoken English, instruction about prosody also helps learners develop improved ability to clear up misunderstandings in the middle of a conversation. This is because when learners understand how prosody affects sounds and meaning, they are made more aware of potential sources of confusion in conversation. When there has been a breakdown, instead of focusing strictly on pronouncing individual sounds correctly and not making grammatical mistakes, they are able to identify prosodic elements that may have sent a wrong signal. Further, students can make adjustments to rhythm and melody and correct the sounds in the most important syllables in order to correct the confusion. Since correction of a conversational breakdown has to be rapid, knowledge of the prosody system gives students the tools to efficiently scan what was just said and make a quick repair.

Conclusion

Without a sufficient, threshold-level mastery of the English prosodic system, learners' intelligibility and listening comprehension will not advance, no matter how much effort is made drilling individual sounds. That is why the highest priority must be given to rhythm and melody in whatever time is available for teaching pronunciation. If there is more time, then other lower priority topics can be addressed (e.g., the sound of the letters *th*, the difference between the sounds associated with *r* and *l*, etc.), but priority must be given to prosody.

Teachers are often hesitant to tackle rhythm and melody in class because these topics are perceived as complicated and full of nuance. Textbooks on the subject tend to be intimidating because they present so many rules. However, while intonation analysis can get very complicated, teaching a threshold level of understanding of the core system is actually quite simple at its most basic level.

If there is only time to teach awareness of the core system and practice these vital rhythmic and melodic cues, as well as certain critical sounds (e.g., the grammar cues at the end of words), students will have achieved a great deal of communicative competence. But if these prosodic cues are not taught, then efforts at achieving communicative competence by drilling individual sounds will prove frustrating. After all, practicing pronunciation by focusing only on individual sounds is like using only part of the language. As one teacher trainee put it after training course, "Practicing pronunciation without prosody is like teaching ballroom dancing, only the students must stand still, practice without a partner, and without music."

2 | *The Prosody Pyramid*

The English prosodic system can be illustrated visually with a pyramid shape. We will call it the Prosody Pyramid. The base of the system is the *thought group*. This is a group of words that may be a short sentence, a clause, or a phrase within a longer sentence (Chafe 1970, Bolinger 1989, Brown 1990, Cauldwell 1992). Within that base unit, there is a *focus word* – the most important word in the thought group. Within the focus word, one syllable is given the main *stress*. That syllable functions as the peak of information within the thought group. It is sometimes called the *nucleus*, or the *peak*. The sounds in this syllable must be clear and easily recognized, because this is the center of meaning of the thought group. All the processes of spoken English work together to make this syllable easy for the listener to notice and recognize.

While the various levels of pronunciation are interdependent, they will be more easily understood if separated and presented one step at a time. In the sections that follow, we will consider each level of the Prosody Pyramid in turn and explain how each level relates to the others.
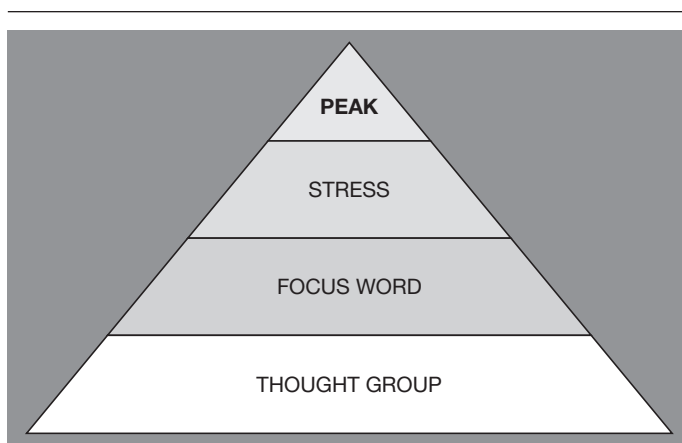

Figure 2: The Prosody Pyramid

The Thought Group

Perhaps the most important way that English speakers help their listeners to follow their meaning is by grouping words so that they can be more easily processed. The stream of talk in English does not flow smoothly; it is composed of a series of brief spurts. Interestingly, when native speakers listen to English

speech, they do not generally notice this intermittent quality. Rather they get an impression of smooth continuity. But this seeming stream is really made up of longer and shorter chunks. These chunks of speech are the organization of the speaker's thoughts into groups. As mentioned earlier, a thought group of words can be a short sentence, a clause, or even a phrase. While, the English system for grouping words seems logical to native speakers of English, many languages either do not rely on the same signals to indicate thought boundaries, or they put the boundaries in different places (Ballmer 1980).

In written English, punctuation is used to help readers separate thought groups. For instance, in the following example a comma and a period are used to mark the end of each thought group.

Example

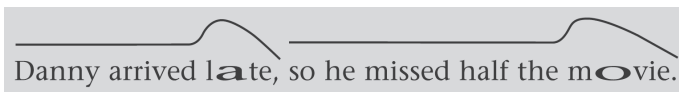Danny arrived late, so he missed half the movie.

Not only does written English use punctuation as an aid, but readers can always reread a piece of text if they become confused about the organization or grouping of information. But in spoken English there is neither punctuation nor the opportunity to recheck the words, so listeners must rely entirely on prosodic markers in order to know which words are grouped together.

Prosodic Markers for Thought Groups

Thought groups generally start on a higher pitch and then drop at the end. To clearly mark the end of the group, there are several prosodic signals:

(a) a pause

(b) a drop in pitch

(c) lengthening of the last stressed syllable (the most subtle signal)

In slow speech, the pause is the most obvious indicator that a thought group has ended. But during rapid speech, there is no time for pauses, so pitch drops are essential signals.

Example

Danny arrived la**te**, so he missed half the m**o**vie.

(from Gilbert 2005, 132)

In general, a pitch drop means "the end," and there is a relationship between the degree of finality and the size of the drop. For instance, a slight drop in intonation typically marks the end of a thought group within a sentence; a

bigger drop marks the end of a sentence or an entire comment; a major drop indicates, "I have finished my remarks, and it is now your turn to speak."

In a more subtle (but equally systematic) way, spoken English uses the lengthening of the final stressed syllable in a thought group to signal the end of that group. This lengthening may exist in order to give time for the pitch drop (Lehiste 1977, 260), which helps the listener to notice that the thought group is finished.

Teachers sometimes ask for rules to give their students about how to decide where to begin and end a thought group. Although linguists have been studying this question for decades, no one seems to have developed rules that are sufficiently simple and practical for language learners. Instead of attempting to teach complex rules, it is far more useful to help students learn to hear the signals of thought grouping and think about grouping in their own speech. One way to build awareness of thought group boundaries is to have students analyze a piece of recorded speech to determine where the thought groups begin and end. When students work in pairs or in small groups to analyze a dialogue or a paragraph, their individual choices about grouping will likely be different. Nevertheless, awareness of the concept is raised when they have to explain their choices about how the words are grouped.

The Focus Word

Every English thought group has a focus word. This is the most important word in the group. It is the word that the speaker wants the listener to notice most, and it is therefore emphasized. To achieve the necessary emphasis on the focus word, English makes particular use of intonation.

The basic principle at play when emphasizing a focus word is contrast. Notice the drawings in the Figure below.
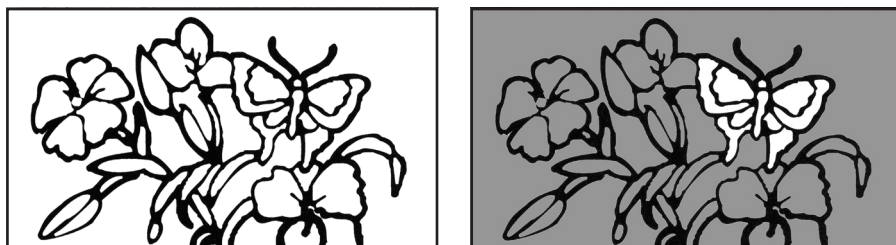

Figure 3: Illustrates emphasizing a focus word (from Gilbert 2005, 44)

The butterfly in the picture on the right is easy to see because it is highlighted, and the rest of the drawing is shaded. The butterfly in the picture on the left blends in with the rest of the drawing and is therefore difficult to see. Intonational emphasis, when properly applied in a thought group, highlights

the focus word so that it stands out, leaving less important information in the thought group to fade into the background.

Emphasis and De-emphasis

Since other languages use other signals to call attention to the important idea in an utterance, learners of English as an L2 often do not notice this specifically English system for signaling emphasis. Because the English system of sentence emphasis may be quite foreign to student intuition, it helps to present a set of basic rules about how this system works. Several simple focus rules are presented in *Clear Speech* (Gilbert 2005), and those rules are reproduced in Appendix 2 of this booklet. Among these rules is the basic principle that the focus word in a thought group is usually a *content word* (i.e., a noun, verb, adverb, or adjective). Content words carry a great deal of information, and are therefore more likely to be the most important word in a thought group.

Notice the following thought group, where *easy* is the focus word.

Example

How do you spell "easy"?

On the other hand, *structure* words (i.e., pronouns, prepositions, articles, "to be" verbs, conjunctions, auxiliary verbs) are usually not the focus word in a thought group. In fact, these less information-heavy words are usually *de-emphasized*. English speakers usually *reduce* (or weaken) them and as a result they are hard to hear. For instance, many structure words are often contracted (e.g., *she is* becomes *she's*). Reductions like this help to intensify the contrast between the focus word and the words that surround it.

Example

How d'you spell "easy"?

The fact that structure words are commonly reduced explains why learners often do not notice these words when they listen to others speak. Reduction obscures the words, making them difficult for learners to hear. This is true of affixes as well. Because English speakers reduce affixes (i.e., they are not pronounced loudly and clearly), learners will often miss them and even omit them from their own speech. For instance, learners might pronounce a past tense verb like *rented* as *rent* because they have not noticed the reduced *-ed* ending.

Learning to reduce structure words is a challenge for learners. Part of the challenge arises from the logical contradiction involved in asking students

to "pay attention to the words that need to be obscured." However, practice with emphasizing the focus word will help them to grasp the contrast between the highlights and shadows of a sentence. When students have a good command of these aspects of sentence rhythm and melody, they will be prepared to understand why some words are reduced and what it means when they are *not* reduced (e.g., "I will NOT loan you the money" is much stronger than "I won't loan you the money").

It is common for students to emphasize every word when they are anxious to be understood. This gives an impression of agitation or insistence that they may not intend, and it certainly diminishes the effectiveness of the prosodic "road signs" that the listener needs. The same is true if they speak in a monotone, another common way of dealing with uncertainty in a new language.

Furthermore, many English learners are suspicious of reductions, including contractions, because they regard them as substandard usage. This feeling can produce a covert resistance to exercises that practice these aspects of spoken English. Students must be helped to understand that reduction is a necessary part of the system to provide contrast for the highlighted words. In fact, efficient listening comprehension depends in part on the ability to recognize important grammatical information even when it is in a reduced form.

How can teachers overcome students' reluctance to take reductions seriously? A well-learned template sentence can help reassure them about the function of reduction (e.g., "How d'you spell . . ."). Also, it is useful to use light poetry, or chants, which require reduction in order to make the rhythm fit. (For more on the use of template sentences and other suggested techniques, see Chapter 4 of this booklet.)

Stress and the Peak Syllable

Every English multi-syllabic word has a syllable that receives the main stress. This is part of each word's signature, so to speak. But in the focus word, this stressed syllable gets special attention, because it represents the peak of information in the thought group. It is the most important syllable within the most important word, and, therefore, the sounds in the peak syllable must be heard clearly.

As mentioned in the previous chapter, English learners tend to ignore stress when they learn vocabulary. And failure to learn the stress pattern of new words often leads to an inability to recognize those words in spoken form. Earlier, we considered this and other reasons why learning stress patterns is important. But the present discussion of peak syllables, and the role they play in thought groups, leads us to a more crucial reason why learners should develop a familiarity with English word stress: When students learn a new word, they need to know which syllable in that word will be the peak syllable when the word is chosen as the focus of a thought group. In other words, learners need to know the stress pattern of a word if they are going to use it as a focus word.

We saw earlier that the stress pattern of a word as shown in the dictionary is actually only a "potential" stress pattern. That is, the stress pattern shown in the dictionary is only realized in certain prosodic contexts. To be more specific, the dictionary stress pattern is only really used when the word is chosen as a focus word. So, although the dictionary stress pattern is not the only way that the word is ever pronounced, students need to have that pattern available in order to emphasize the word in speech.

Brown expresses the importance of recognizing English word stress patterns this way:

> *It is essential in English to learn to pay attention to the stressed syllable of a word, since this is the best and most stable feature of the word's profile, and to those words in the stream of speech which are [emphasized], since these mark the richest information-bearing units. Listeners who fail to distinguish these are likely to flounder. They are likely to lose even more information if they do not know how to identify information peaks and how to use the information encoded in this distribution.* (1990, 151)

At the same time, learners need to be able to notice when a word is being de-emphasized, and recognize the significance of that de-emphasis (e.g., it marks the word as old information that has been previously established or stressed). The fact that a word is de-emphasized tells the listener something about the relationship between that word and the central idea of the thought group. It also sends signals about the relationship between that word and what has come before in the conversation. But if learners are going to recognize when a word is being de-emphasized, and what the significance of that de-emphasis is, they will first have to be familiar with the word's basic stress pattern.

The Signals of Stress

Because the identification of stress is so important for communication in English, native speakers use a combination of signals to make clear which syllable is stressed; these are loudness, contrastive vowel length, contrastive vowel clarity, and pitch change. Extra clarity and length also happen to give the impression of loudness, so many teachers assume that loudness is the essential lesson element to teach. But it is more pedagogically powerful to focus students' attention on the systematic use of length, clarity, and pitch as they are less common signals of stress in other languages. These signals occur together, but it is best to teach them separately so that the student can focus on one aspect at a time.

Vowel Length

The vowel at the center of a syllable may vary in length for a number of reasons (e.g., what kind of consonant sound follows the vowel), but stress is the

most important reason for the vowel in an English word to be lengthened or shortened.

Dalton and Seidlhofer explain the importance of vowel length as a signal of stress this way:

> *What are the decisive cues we should look for in the perception of stress? . . . Experiments with speakers of other languages have corroborated the importance of pitch as a cue in the perception of stress, but they have also shown that the relative weight of the factors involved is definitely language specific. As far as English is concerned, for instance, the duration of syllables seems to be a more important cue than in other languages.* (1994, 34)

Brown, likewise, identifies vowel length as a particularly important stress signal in English:

> *Any syllable which is markedly longer than the surrounding syllables will also be perceived as stressed. From the point of view of teaching production of stress, length is the variable that most students find easiest to control, and is a reliable marker of stress.* (Brown 1990, 46)

Some languages do not lengthen vowels. The vowels in these languages always have the same duration. If the L1 has a characteristically variable duration of vowels, students may hear differences in length very well, but they may fail to connect the difference in length with stress because their own L1 uses length in different ways. For instance, some languages distinguish "double vowels" from a single-length version. These length-pairs are perceived as distinct in the same way that *bit* and *bat* are perceived to be different vowels by an English speaker.

Example

1. Hungarian: ver *to hit*
                ver (lengthened vowel) *blood*

2. Japanese: oba-san *aunt*
               obaa-san (lengthened vowel) *grandmother*

Because speakers of these L1s may have difficulty associating length with stress, it is helpful to provide sufficient practice both in producing lengthened vowels in stressed syllables, and in listening for the contrastive lengthening.

But as McNerney and Mendelsohn observe, "it is not enough to stress a word correctly; care must be taken also to unstress (de-stress) it correctly. If the unstressed syllables are not reduced in length, the essential contrast between long and short is obscured" (1992, 187). Students, therefore, should be taught to shorten the vowels that are not stressed in a focus word. After all, if all the syllables in a word are long, it becomes extremely difficult to identify which

syllable is meant to be identified as stressed. Dalton and Seidlhofer observe that "[the] duration of English unstressed vowels is reduced to a fraction of their stressed counterparts" (1994, 42). Learning about contrastive vowel length, therefore, involves learning to shorten those unstressed vowels.

Vowel Clarity

Besides length, the most significant signal of stress in English is clarity. All stressed vowels are clearly distinguished from each other, while most unstressed vowels are reduced to schwa.

Schwa, /ə/, is the sound of the second vowel in *sofa* or *lemon* or the first and last vowels in *banana*. It is not only very short, but has an unclear, obscured quality. This lack of clarity operates as a contrastive background to highlight the stressed vowel, which needs to be quite clear. When students understand this contrastive principle (and that only some of the syllables in a sentence really need to have clear sounds) their workload in correcting conversational misunderstandings becomes much lighter. Trying to correct all the sounds in a sentence which has been misunderstood is not only inefficient, but is apt to frustrate the listener trying to guess what the speaker is trying to say. On the principle of "listener-friendly pronunciation," only the crucial syllables need to be clear – the rest can be relatively muddy. A student who has been trained to think about focus words can locate the crucial word, correct the sounds in the peak syllable, and thus make a rapid fix so the conversation can continue.

Since many vowels are reduced to schwa, it is the most commonly used vowel sound in spoken English. Unfortunately schwa has no symbol in the written language (i.e., there is no alphabet letter that represents schwa), and it therefore presents a serious barrier to listening comprehension for students who have learned the language from print.

Vowel reduction is particularly baffling for students whose L1 never reduces vowels, such as Spanish and Japanese. Learning to hear the difference between clear and reduced vowels is therefore a challenging but essential task. Students do not necessarily need to be able to produce this reduced vowel sound (a difficult goal for beginners), but practice in listening for stress and reduction can help students to recognize the characteristically English system of contrastive clarity.

In phonetics classes, narrow transcription must take into account three reduced vowel sounds, but for practical ESL/ELT purposes the term schwa, /ə/, can be used for all of them. Below are examples of changes in vowel quality due to stress (Dauer 1993, 62).

Stressed Vowel		Reduced Vowel	
1. ball	/'bɔl/	balloon	/bə'lun/
2. fast	/'fæst/	breakfast	/'brɛkfəst/
3. late	/'leɪt/	chocolate	/'tʃaklɪt/

The combination of brief duration and vagueness of the unstressed sound causes listening comprehension difficulty for students who are used to the written form of English. Conversely, the shortness and obscured quality of these vowels also cause de-coding difficulty for students who know how the words are pronounced but do not recognize them in printed form.

One American volunteer literacy tutor, on hearing about schwa for the first time, exclaimed, "You mean, the vowel loses its integrity?" A Japanese teacher wrote:

> *[Schwa] is the most elusive, selfless and yielding vowel of all. Teaching schwa is almost like teaching "nothingness." Schwa is in the path from the previous segment to the next segment without having its own identity . . . acquiring schwa means the acquisition of the co-articulatory pattern of English, and it seems to greatly improve the level of pronunciation.* (Kondo 2001, 182)

Another Japanese teacher wrote about the reduced vowel even more poetically: "Schwa is a modest vowel, who steps aside to let others shine" (Toyama, 2004).

Stressed vowels Long, clear	Unstressed vowels Short, clear	Reduced vowels (schwa) Very short, very unclear
a e i o u	a e i o u	ə ə ə ə ə
Very easy to hear	Easy to hear	Hard to hear

Figure 4: Illustrates the difference between stressed vowels, unstressed vowels, and schwa

Pitch Changes

All languages have one or more ways to show the difference between new and old information, but English relies on intonation for this purpose more than most other languages. When a word becomes the focus of meaning, the stressed syllable of the word (the peak syllable) is marked by a major change in pitch. Notice how pitch changes in the following exchange mark the new information in each utterance.


Example

Did you have a good DAY?

I had a bloody HORRible day.
(from Cruttendon 1986, 89)

While the pitch change that marks the peak syllable in a thought group is usually a rise pitch (as in the examples above), it does not have to be. Each speaker has a natural baseline pitch for speaking, and varies from this baseline (either up or down) in order to call attention to the focus word. Patel makes the following observation about the direction of pitch changes:

> *In intonation languages such as English (in which pitch does not distinguish lexical items, as it does in tone languages), the direction of the pitch change is seldom crucial to understanding. For example, if a pitch movement is used to signal focus on a word, it may matter little to a listener if the movement is upward or downward, as long as it is salient and detectable.* (2008, 234)

In English, pitch changes are the most important signal of new information, or special importance (Bolinger 1986, 21). The stressed syllable is lengthened in order to make the pitch change easier to hear. If there has been adequate practice of recognizing lengthened syllables in previous course work, adding pitch should be a manageable task at this point. However, unless students have been trained to pay attention to the contrastive signal, they are apt to fail to notice it and therefore miss the point. For that reason, students should be taught to listen for the acoustic emphasis given to focus words. This helps them learn to listen "selectively," rather than giving equal attention to every word they hear. Listening for emphasis guides listeners to the essence of the message (Brazil et al. 1980, McNerney and Mendelsohn 1992).
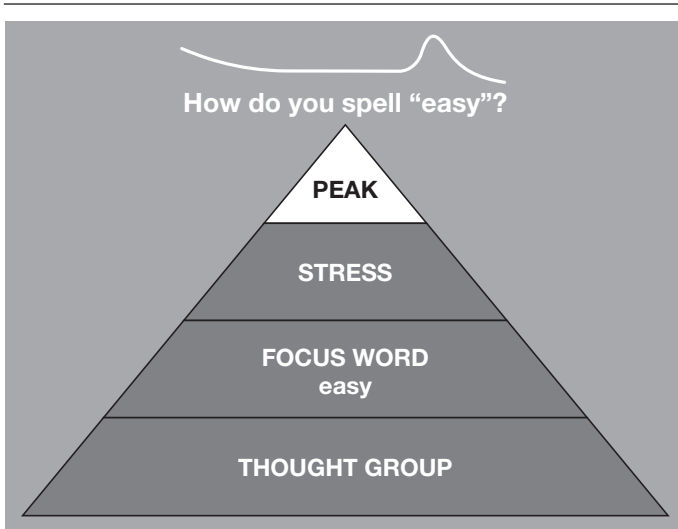
Rising pitch
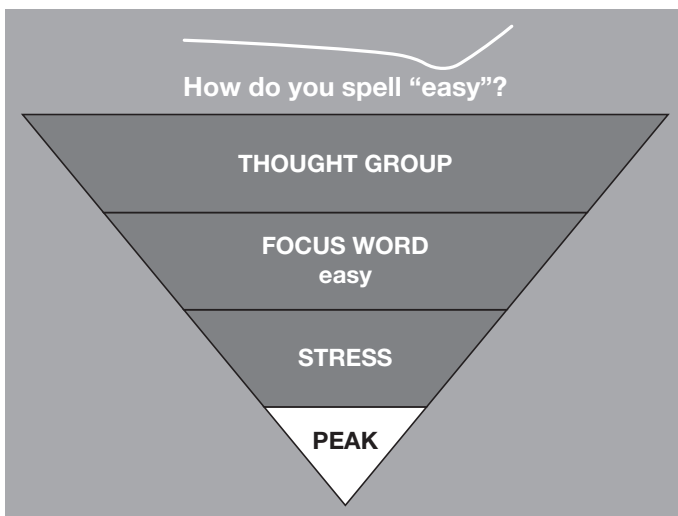
Falling pitch

Figure 5: Rising and falling intonations of "easy" to emphasize a word

3 | *The Prosody Pyramid and Individual Sounds*

Vowel Sounds in the Peak Syllable

The vowel sounds in a peak syllable are crucial. Other parts of the thought group can (and should) be muffled, but the vowel sound at the center of the peak syllable needs to be extra long and extra clear.

Part of achieving the necessary clarity of this vowel involves pronouncing it with the correct sound. But pronouncing vowels with the correct sound is often difficult for learners. Deciding how to pronounce the vowels in an English word based on spelling can be especially challenging. Students need practical rules to help them guess how printed words should be pronounced. This is an essential early skill because it enables learners to use printed material to read aloud on their own and to practice what they have been taught in class. The following discussion concerns the connection between saying the vowels accurately and decoding them from printed spelling.

The Challenges Involved in Learning Vowel Pronunciation

The Mechanics

Accurate vowel sounds are harder to learn than consonants probably because the tongue has no touching points to anchor them. Vowels are pronounced with the various parts of the tongue moving in open space, so to speak. On the other hand, with consonants, parts of the tongue do consistently touch somewhere. This distinction between vowels and consonants may be why consonants tend to be mastered more efficiently through speaking tasks, whereas introduction to vowel distinctions may be more efficiently accomplished through listening tasks (Fucci et al. 1977, Leather 1983, Chun 2002).

Interference from the L1 Sounds

Each language has a set of sounds a small child must learn quite early. From that point onward, any new language will be intuitively understood through the filter of that first set. The problem of L2 learning is to add new sounds. Furthermore, there is an interrelationship between speaking and reading a new language. L2 students need a way to guess how to pronounce printed English so that they can use printed words to practice. If they practice with the wrong sounds, or if they hear the sounds incorrectly (filtered through their own sound inventory), they are apt to fossilize the wrong pronunciation, making it more difficult to

correct later. Therefore, students need help guessing how to pronounce English spelling as early as possible, preferably not waiting until errors are fossilized.

Interference with Phonemic Awareness

Students who first learned to read in a non-alphabetic language (e.g., Chinese) had a different kind of literacy training than students who first learned to read in an alphabetic language (e.g., English or Spanish). Unlike those whose L1 is an alphabetic language, non-alphabetic learners' earliest literacy training involved visual and kinesthetic parts of the brain so that they could recognize characters. They learn by repeatedly drawing the characters. Learners with alphabetic L1s, on the other hand, had to learn to listen for sounds in sequence. This is a necessary precondition for attaching sounds to a sequence of alphabetic letters. Learning to hear spoken language this way is a real challenge for students with a non-alphabetic L1.

> *For those of us who are familiar only with an alphabetic writing system, the existence of single letters suggests that speech is segmented into individual sounds. However, people who have not been taught an alphabetic writing system find it easy to syllabify words but difficult to segment them into sounds. This also holds true for pre-school children, who have not yet been taught an alphabetic writing system.* (Dalton & Seidlhofer 1994, 35)

Interference from the L1 Rhythm

While those students who first learned to read in an alphabetic language did learn to listen for sounds in a sequence, they still have the problem of automatic interference from the rhythm of their first language. As we saw earlier, L2 learners tend to rely on their L1 rhythm system (Aoyama et al. 2007), and this is likely to interfere with acquiring literacy in English. It has been well-established that dyslexia in native speakers can be connected with impaired timing or motor deficits (Thomson et al. 2006), so it seems reasonable to assume that learners listening to a new language within the constraints of their L1 rhythm might also be struggling with faulty timing. Many other research projects have dealt with the rhythm/literacy connection (e.g., Thomson et al. 2006, David et al. 2007, Wood 2006, Goswami 2003).

English Spelling

Even when students are equipped with both the ability to hear sounds in sequence and can also grasp English rhythm, there remains the fact that English spelling is so complicated that it is hard even for native speakers to learn it. Speakers of many other languages in which the sounds and the letters are more closely connected have a much easier time learning to spell in their L1 than native speakers of English have learning to spell in theirs.

Here is an example of the difficulty of guessing how to spell English from the sound of the spoken form. A group of Spanish speaking migrant workers were asked to figure out how to show the pronunciation of the following English sentence: "Everybody wants to learn English." After hearing it a number of times, they agreed on the following: "Evri bari guants tulem inglis" (Kalmar 2001, 23). Comparing the two versions of this sentence can give some idea of the challenge of English literacy for ESL learners.

The English Alphabet

Teachers (and their students) usually assume that the students already "know" the alphabet. In fact, if you come from a different alphabet background – such as Russian, where for instance the letter *Z* comes early in the alphabet instead of at the end – using a dictionary is frustrating. Furthermore, people who have difficulty being understood need a quick way to repair a communication breakdown. Spelling the focus word out loud can be a big help, but only if the learner can use the alphabet with ease.

It is worth taking time to work with the names of the letters because, aside from helping to decode print, spelling aloud is a good way to correct a communication breakdown. The problem is that both teachers and students tend to think that they have adequately covered the alphabet on the first day of study of a new language; and nothing more needs to be done about it. But did students actually learn how to pronounce the letters? Think of José, who, if required to spell his name aloud might well say "G - O - S - A." Aside from a few typical problem consonants, the names of the vowel letters are the most commonly confused. This makes a serious problem for decoding written English, because of the complexity of vowel spellings in this language.

Vowel Sounds and Vowel Letters

Students need to learn how to say vowel sounds accurately, and how to decode the letter spellings. Starting from this premise, how best should vowels be presented? Learning vowel sounds can be materially aided by attention to two crucial aspects of the spoken form of English vowels: the distinction between vowels with and without off-glides (i.e., $/^y/$ or $/^w/$ sound) and the effect of stress on vowel sounds. First of all, students need to really know how to pronounce the vowel letters as presented in the alphabet: the "alphabet names." This is an especially challenging task for students whose L1 uses a Roman alphabet, but pronounces the letters differently.

It is customary to teach vowel sounds through comparing pairs of sounds that are physically close in articulatory placement (e.g., *ship/sheep*). But it may be more efficient to teach these vowel sounds according to the usual ways each vowel letter is pronounced.

Most of the English vowel sounds can be divided into two basic categories. The first question is how to describe these decoding categories so that the distinction can be easily grasped. Traditionally, spelling books have described these sound pairs as *short* and *long*. For instance, the -a- in *mat* is described as short, while the -a- in *mate* is described as long. This terminology may be useful for teaching reading to native speakers of English, but there are several problems with using these terms with English learners. Leading pronunciation textbooks do not use these terms for vowel quality but reserve them for actual duration of vowel sounds (Dauer 1993, Gilbert 2005, Grant 2001, Miller 2000, Morley 1992). Here are some reasons why the terms are not really helpful for L2 learners:

1. The terms are not very intuitive for people new to English. Because teachers are used to the concept, they assume it is easy. But actually *short* and *long*, as names for categories of vowels, are no more intuitively obvious to students of English than the terms *soft* and *hard* are as names for consonants, for beginning students of Russian.

2. The terms are not really accurate. It is true that when the sounds are said alone, a long vowel takes longer to say than a short vowel, because the "long" vowels all have a small off-glide /ʸ/ or /ʷ/ sound, which takes a little longer to say. Short vowels do not have off-glides and therefore are shorter in duration when said alone. However, the fact is that sounds are rarely said by themselves. In the actual context of a word, the duration of the vowel is affected by its surrounding sounds and the stress pattern, all of which can override the intrinsic length of the vowel.

3. The most serious objection to using these terms for the distinction between the two vowel categories is that if *short* and *long* are used this way, it tends to undermine the meaning of these terms when used to describe the actual duration contrasts which are essential to the English system of stress. Lengthening for stress is important for literacy, as well as intelligibility and listening comprehension, so it would be better to use entirely different terms to describe the vowel contrast in a pair like *mat/mate*.

If not *long/short*, what terms might be preferable? The following have been suggested: *tense/lax*, *simple/complex*, *glides/non-glides*, and *static/dynamic*. This booklet suggests an alternative pair of categories: *alphabet vowel sounds* and *relative vowel sounds*.

Alphabet Vowel Sounds and Relative Vowel Sounds

The alphabet vowel sounds are the vowels in *made*, *tea*, *ice*, *soap*, and *cube*. The term *alphabet vowel* is used because these vowels sound like the names for the

letters -a-, -e-, -i-, -o-, and -u- in the English alphabet. The five alphabet vowels all have their main *relative vowel* partners. Both vowels are spelled with the same letter, but they have different sounds. These ten vowels, plus schwa, make a good foundation for helping students to guess at printed spellings. Other vowel sounds can be taught later, after these basic eleven are firmly under control.

Alphabet Vowel Sounds

It is probably most practical to teach the alphabet vowel sounds first, since they are a natural part of teaching the names of the alphabet letters. The alphabet vowels (as in *made*, *tea*, *ice*, *soap*, and *cube*) all have some shift of the tongue upward while they are being spoken. This shift is accompanied by a change in the shape of the lips. Using a tiny superscript ^{y} for the front vowel sounds of letters -a-, -e-, and -i- can help students notice the need for a shift of the tongue and spreading of the lips. A superscript ^{w} for the names of the back vowel sounds of the letters -o- and -u- can help indicate the off-glide and lip-rounding necessary for alphabet vowels. Notice that the tongue shift is greater for some alphabet vowels than for others.
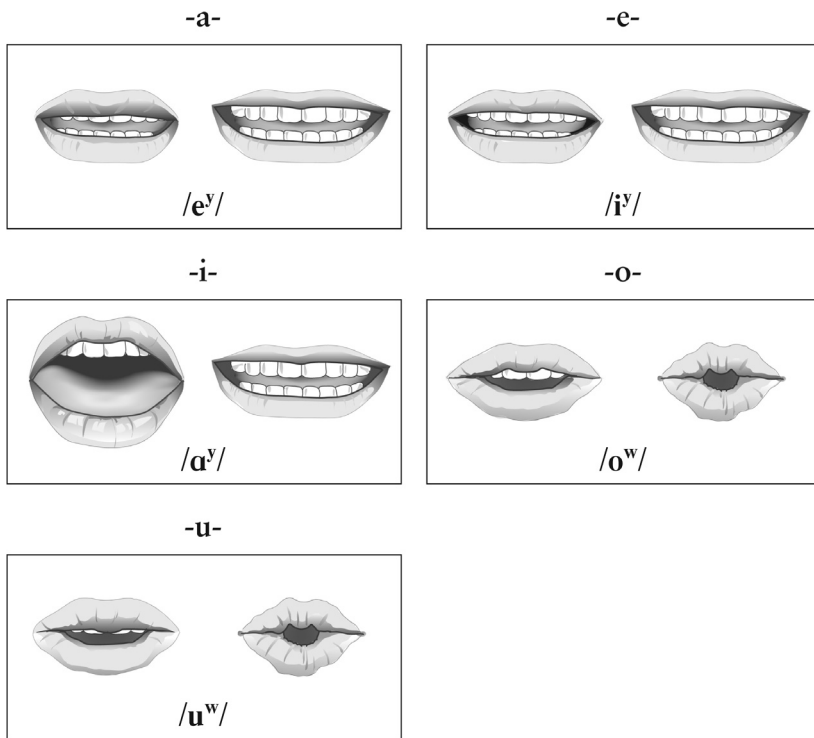

Figure 6: Illustrates tongue and mouth shifts for vowel sounds (from Gilbert 2005)
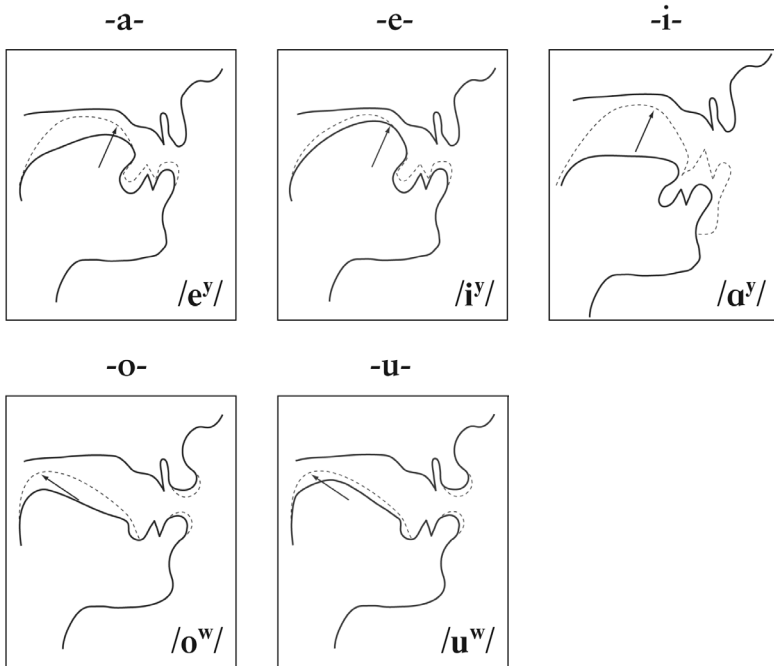
| -a- | -e- | -i- |
| /eʸ/ | /iʸ/ | /ɑʸ/ |

| -o- | -u- |
| /oʷ/ | /uʷ/ |

Figure 6: *continued from previous page*

The Relative Vowel Sounds

The relative vowel sounds (as in *bat*, *bet*, *bit*, *hot*, and *cup*), do not have off-glides. These sounds are the most common pronunciation of the vowel letters, but they are more challenging to learn because they are typically foreign to many English learners. Distinguishing the alphabet and relative vowel pairs requires a lot of listening practice. (See example exercises in Chapter 4 of this booklet).

Rules for Decoding Vowel Spellings

It is common practice to present spelling to English learners in the same way that it is done for English-speaking children – that is, by giving them phonics rules such as the following:

> Rule A: When two vowels are together, the first one says its name and the second one is silent.
>
> Rule B: Silent -e- at the end of a word makes the vowel that came before say its name.

The problem with using rules like this in an ESL/ELT context is that the rules presuppose (1) a native-speaker's knowledge of the pronunciation of a large vocabulary, including the silence of the last letter in a word like *cake*, and (2) a native speaker's mental inventory of sounds (e.g., the vowel sounds in *cat* and *kitten*). Also, these rules do not account for the relative vowel sounds, which are the most common pronunciation of the vowel letters. A further problem with traditional phonics rules is that the examples given are almost always monosyllabic words (e.g., *bit*, *bite*, *boat*), but adult English learners need to decode multi-syllabic words.

Below are phonics rules adapted for learners of English as an L2 at two different levels. These rules rely on the terms *alphabet vowels* and *relative vowels*. They work reasonably well, despite many exceptions (Gilbert 2001, 2005). The chart on page 47 shows some of the prediction value of these rules, based on the spelling-to-sound findings of a major corpus-based study (Carney 1994).

Rules for Low-Level Students

The Two Vowel Rule: If there are two vowel letters in a short word, the first vowel sounds like its alphabet name. The second vowel is silent.

/eʸ/	/iʸ/	/aʸ/	/oʷ/	/uʷ/
cake	these	ice	cone	fruit
main	cream	pie	soap	Sue

The One Vowel Rule: If there is only one vowel letter in a short word, it sounds like a relative of the alphabet vowel. (Note: No off-glide.)

/æ/	/ɛ/	/ɪ/	/a/	/ʌ/
had	bed	his	hot	sun
Jan	Ben	Kim	John	Russ

Rules for More Advanced Students

When students have had some physical experience with counting syllables, and when they understand how to contrast the clarity of stressed and unstressed syllables, they can adapt the One and Two Vowel rules to aid in guessing the pronunciation of multi-syllabic words.

The Two Vowel Rule: If there are two vowel letters in the stressed syllable, the first vowel usually sounds like its alphabet name. The second vowel is silent.

available	complete	advice	approach	recruit
arrangement	agreement	mileage	unloading	accuse

The One Vowel Rule: If there is only one vowel letter in the stressed syllable, it usually sounds like a relative of the alphabet vowel.

apple	relative	interesting	possible	redundant
adapted	integrity	articulatory	accomplish	husbandry

Consonant Sounds

When it comes to teaching and practicing consonant sounds, work should be concentrated on the most urgently needed core consonants. If there is more time, other consonants can be addressed. The highest priority sounds are at the end of words because they give crucial grammar cues. They are usually spelled with the letters *s* or *d*, (e.g., *books/bags*, *paid/passed*).

Many languages do not allow consonants at the end of words, or only allow a certain few to occur at the end of a word. This means that students with such an L1 may have difficulty noticing these word-final grammar cues in English.

The Stop/Continuant Contrast

One of the most useful ways to help students hear (and say) final consonants is to teach the difference between *stop sounds* and *continuant sounds*. A stop sound is formed by stopping the air flow in the mouth, but a continuant sound can be continued as long as speakers choose (and have air in their lungs). For instance, *but* ends in a stop, and *bus* ends in a continuant.

Students can benefit by being given time to practice pairs of words like *but* and *bus*, feeling the difference in tongue position (perhaps with eyes closed to protect from distraction). They should be able to feel a complete closure while they are holding the /t/ sound, and continuing air flow while continuing to say the final sound in *bus*. They might get the idea better by holding the /s/ position and drawing in cold air while continuing to hold their tongues in that position.
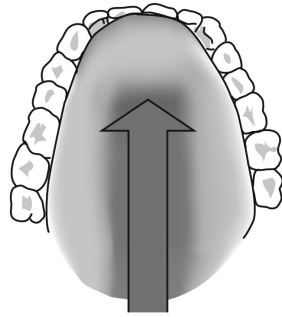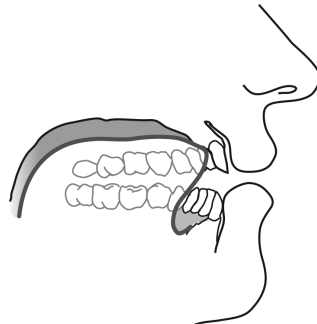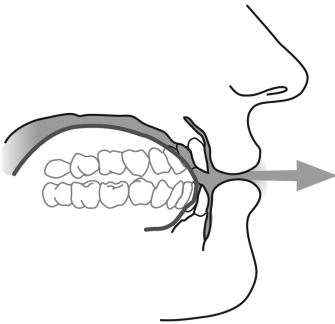
Looking down

bussss

but
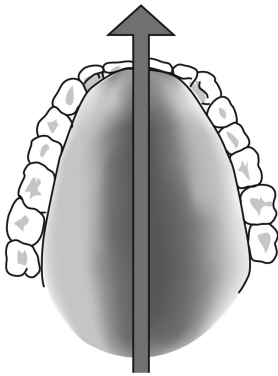
Air continues

Air stops
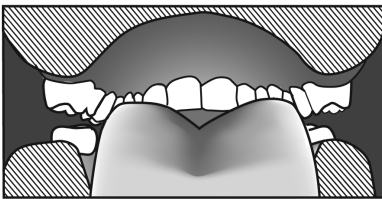
Looking from the side

Looking to the front

Figure 7: Illustrates stop and continuant sounds (Gilbert 2005, 77, 78)

Grammar Cues at the End of Words

Again, the stop / continuant distinction is significant for listening comprehension because the signal for important grammatical information often consists solely of a stop or a continuant pronounced at the end of a word.

Example

books	book	(number)
rugs	rug	(number)
raise	raised	(tense)
we're	we'd	(tense)
they'll	they'd	(tense)

Also, intelligibility depends on clarity in these consonants. For example, "What is it?" may be heard as "Where is it?" if a learner has not learned to recognize the final stop in *what*. (Many languages pronounce the letter *r* as something like a quick stop sound.)

The stop sounds in English are /b/, /p/, /d/, /t/, /g/, and /k/. All other English sounds are either continuants or combine a stop and a continuant (e.g., the beginning and ending sounds in *church* and *judge*).

Conclusion

We began this booklet by noting that traditional pronunciation training usually focuses on minimal-pair drilling of vowel and consonant sounds, concentrating on individual sounds that are hard for students to hear or produce, in the hopes of achieving "mastery of the English sound system." Unfortunately, this kind of drilling often produces depressing results and tends to take up a great deal of available classroom time. In this chapter, we have considered an approach to teaching individual English sounds that takes into consideration the larger prosodic framework of spoken English and sets some priorities for which sounds should be addressed first, and how.

It is terribly inefficient to teach individual sounds without establishing some basic understanding of the English system of rhythm and melody. For one thing, without an understanding of English prosody, students will end up practicing English sounds in their L1 rhythm. This is a common problem in many ESL/ELT classrooms. The rhythmic structure of each language supplies a timing context that makes it easier to reach the target sound. So, learning about the L2's rhythm will make it easier for students to pronounce L2 sounds. Conversely, not learning about the target L2 rhythm will make the task more difficult. It has been said, for instance, that it is hard to make clear Spanish consonants if you are speaking in a Portuguese rhythm. So rhythm training is a precondition to good, clear target sounds.

4 | *Ideas for Implementing the Prosody Pyramid*

This chapter presents various techniques for teaching the core elements of communication in spoken English.

Quality Repetition

We have already seen that each level of the Prosody Pyramid depends on the other levels. Since these levels are interdependent and occur at the same time, teachers may wonder how they can teach all the levels simultaneously.

The solution proposed in this booklet is to teach *template sentences* through *quality repetition*. Repetition, a truly ancient teaching method, fell into disfavor decades ago because teachers worry that it is boring. But the reality is that *quality* repetition is the opposite of boring, because it helps students feel themselves growing in mastery.

Owning the Template

When students can access a model from their own memory, they have internalized the model, or taken ownership of the model and, therefore, have an instant resource to analyze various aspects of pronunciation. However, they will only own the template if they have had the experience of a great deal of repetition.

Introduce students to a template sentence by saying it several times and then asking them to repeat it with you chorally many times. Only write it out on the board after they can say it easily. At the early stages, this template should be a short sentence with just one thought group (e.g., "How do you spell 'easy'?"). As students reach higher levels of proficiency, the template used may be a longer piece of spoken English – perhaps a longer sentence (with more than one clause) or more than one sentence (e.g., a question and response paired together).

Many forms of repetition can be used to vary pronunciation practice in the classroom, but the strongest approach is to allow students the opportunity to listen to the template sentence many times before they actually speak it. This way, they can begin to internalize the rhythm and the melody before attempting to say the sentence themselves.

Note that the template sentence should be said at normal speed. Slowing down will distort the prosodic effect, which is crucial to making the sentence a reliable template of how spoken English actually flows. Varying the model by saying it loud, soft, low, high, whispering, squeaking, or saying it with your back to the class, can keep the class amused and alert. However, remember to always remain accurate to the natural speed and melody of the template.

Typically, after students have heard a number of renditions, they will be eager to try it themselves. At this point, students can begin saying the sentence as a class. Choral response gives support to each speaker who, if speaking alone, might falter and lose the rhythm. Such choral practice can be followed by smaller groups (e.g., opposite sides of the class) and interspersed with the listening model, all done with a strong sense of continuous rhythm. It is this rhythmic safety net that will provide students with a sense that they are mastering the chunk of spoken English.

Analyzing the Template

After the template sentence has been rehearsed chorally in these different ways, it can be used to analyze some specific core element of the template sentence. In other words, the template sentence will serve as a real chunk of English that can later be dissected as the teacher introduces different aspects of the Prosody Pyramid. For instance, later analysis of the various parts of the template may focus on emphasizing the focus word with a pitch change, or on reducing a pronoun to schwa, or lengthening a vowel sound before a voiced consonant.

Through quality repetition of a template sentence, students are given an opportunity to learn and internalize a piece of spoken English in which all the levels of the Prosody Pyramid are present and at work. In this way, the prosodic flow of the sentence has already been internalized before students try to understand the detailed inner workings of it.

This is a way for students to create, and later to find in their own memory banks, a reference for understanding how melody and rhythm affect the number of syllables, the length of the peak vowels, the location of pitch change, the changes in quality of the sounds, and other features of an English utterance.

What follows are some reasons why the repetition helps students learn the prosodic features of spoken language:

1. Memory and attention are intrinsically rhythmic processes (Di Matteo et al. 1997).

2. Rehearsal of a motor act activates neuronal pathways, classically expressed as "the neurons that fire together, wire together" (Hebb 1949).

3. Learners who hear the external model many times and then hear their own correct speech through bone conduction, build internal audiomotor images of the correct model. This is because hearing is central to the control and monitoring of speech (Greenberg 1995).

4. Chorally supported practice helps convert a short-term memory into a "procedural" (permanent) memory (Kjellin 1999).

Figure 8: Reasons for repetition

Specific Suggestions for Analyzing the Template

What follows are specific methods and techniques for teaching elements of English pronunciation once students have been exposed to a template sentence.

Thought Groups – Lower Levels

To learn about thought groups and the markers that are used to indicate the boundaries of thought groups, lower-level students can benefit from repeated work with telephone numbers or simple math problems. When phone numbers and math problems are written out, the numbers are grouped together using spaces and symbols (dashes, parentheses, etc.), but in their spoken form, pitch changes and pauses serve to make the thought groups clear. For instance, accurately placed pauses and drops in pitch will help a listener to distinguish $2 + (3 \times 4)$ from $(2 + 3) \times 4$. Practice with these numbers and equations, therefore, will help students to hear, produce, and recognize the importance of these markers.
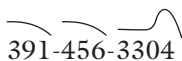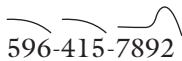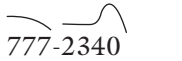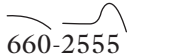
Example Exercises

1. Have students listen for the pauses in these telephone numbers.

Australia	03-9568-0322
Canada	604-892-5808
Japan	03-3295-5875
Mexico	55-19-59-39
New Zealand	9-377-3800
United Kingdom	01223-325-847
United States	212-924-3900

(from Gilbert 2001)

2. Have students listen to and repeat the following phone numbers with appropriate pauses and pitch drops.

a. 391-456-3304

b. 596-415-7892

c. 777-2340

d. 660-2555

(from Gilbert 2001)

3. Have students work in pairs. Student A reads one of the phone numbers in the preceeding examples, and Student B writes down the number using dashes and parentheses to group the numbers.

Thought Groups – Higher Levels

Aside from practice saying numbers and sentences with more than one clause, students should be given the opportunity to listen to (very) short lectures while they read the script, marking with a slash (/) where they think they heard a thought group ending. Pairs or small groups can mark dialogues this way. They can then read the dialogues aloud to the class, to see if others can recognize the thought group signals. The important thing is not *where* speakers divide the groups, but that they actively think about the need for grouping in order to help listeners follow. Practice helping listeners to follow is invaluable training for listening comprehension because it trains them to think in terms of chunks of thought, not just individual words.

Advanced students can learn a good deal by recording a conversation of their own with somebody outside of a classroom setting, that is, in a live context. When listening to the recording later, they can transcribe some of the exchanges and then note where changing intonational emphasis and phrasing could have improved communication (Clennell 1999).

Linking Within Thought Groups

Any final sound can be practiced in a new way through linking words together. This kind of practice helps concentrate students' minds on the particular sound. In addition, it may be easier for them to say a sound at the beginning of a word rather than at the end. But it also helps with listening comprehension, since words in thought groups typically run together, linked as much as possible to keep the group together.

Example Exercise

Have students practice linking with /s/ in the following sentences.

1. The boats entered the water. boatsssentered

2. The coats all need to be cleaned. coatsssall

3. She has less of everything. lessssof

4. Is the boss in the office? bosssin

5. The nights are long here. nightsssare

(from Gilbert 2005, 82)

Focus Words

Second language learners do not hear intonation very well. When they listen to speech, they are powerfully distracted from paying attention to pitch changes because they are struggling to understand sounds, vocabulary, and grammar.

A kazoo is an excellent tool for helping students focus on pitch patterns. A kazoo is a toy instrument into which you hum a melody. The kazoo amplifies the voicing sound made by the vibration of the vocal cords. (Note: If you *blow* there is no vibration and therefore no sound to amplify.) This technique of conveying melody eliminates all the distraction of other elements of speech, so that students can concentrate on the placing of pitch changes.

Figure 9: Kazoo

Example Exercise

Have students listen to the following exchange a number of times and later practice repeat its melody using kazoos.

X: Where shall we eat? (first utterance)

Y: Let's eat in a restaurant. (*eat* is now old information)

X: Which restaurant?

Students need to use intonation interactively and not simply mimic melodic patterns (Pirt 1990, 155). Therefore, an essential part of teaching the communicative value of intonation is to use exercises in which the listener's answers depend on noticing the speaker's choice of focus word. Such tasks give each student many opportunities to practice both speaking and listening. They also provide students with the opportunity to receive immediate, practical feedback. Furthermore, changing students' partners from time to time aids learning to accommodate to variations in speech.

Example Exercise

Have students read the following sentences, then take turns challenging a partner. Student A says question (a) or (b). Student B says the matching answer.

a. Were you in the bank on *Friday*? No, I was there Saturday.
b. Were you in the *bank* on Friday? No, I worked Friday.

a. Were *you* in the bank on Friday? No, but my sister was.
b. Were you *in* the bank on Friday? No, but I was near it.

<div align="right">(from Rogerson & Gilbert 1990, 49)</div>

Reducing Structure Words – Contractions

All practice with rhythm, including the number of syllables, should be accompanied by some physical gesture, such as tapping the desk or moving a foot. This physical movement is far more effective than merely taking mental notice. Thus the difference between *can't* and *cannot* is one tap versus two.

Example Exercise

The teacher can serve as a "musical conductor." With the wave of a hand, signal half the class to say *can* followed by a wave to the other half to say *not* followed by both hands waving the whole class to say *can't*, followed by a series of similar contrasts in full and contracted forms.

If this is done with a rhythmic swing, it can be a lot of fun. Enjoyment of this kind of activity helps to overcome reluctance to contract or reduce words. Furthermore, as with choral repetition of template sentences, students are supported (and made more bold) by the chorus of voices repeating with them.

Emphasizing Structure Words

Speakers may choose to emphasize a structure word. Because this is a change from the basic pattern of focusing on a content word, listeners are alerted to pay special attention to that word. Therefore, students who hesitate to use reductions should be made aware that use of the full form conveys a meaning they may not intend.

Example Exercise

Have students listen to the following sentences and discuss possible reasons why the particular structure words are emphasized.

A: Did Laura send the gift?
B: No, *he* sent it.
(The emphasis on a pronoun is used to imply contrast with something understood previously.)

X: Can't you loan me the money?
Y: No, I can *not* loan you money.
(Full form gives strong emphasis to *not*.)

Stress and Vowel Length

Stretching wide, heavy, rubber bands while practicing the lengthened vowels can provide students with a kinesthetic focusing tool to reinforce the contrast in duration. Note: Thin bands are apt to break and also do not give the full impression of the real effort involved in making some syllables longer than others.
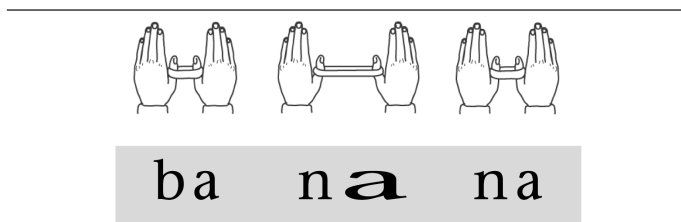
ba   na   na

Figure 10: Use rubber bands to illustrate stress and vowel length

Example Exercises

1. Have students say the words below while stretching a rubber band wide when saying the stressed syllable.

   Canada   umbrella   sandwich
   English muffin   traffic signal   elementary

2. Continue this kinesthetic practice of stress, but with a variety of physical markers for the stressed syllable (e.g., hand raising, head raising, eyebrow raising – which is difficult but amusing – or rising from the chair). Have students volunteer other vocabulary for this kind of practice. Some teachers actually have students up on their feet marching in a circle and dipping or standing taller for the stress. (Acton 2002). This can be a welcome change when class energy is getting low.

3. This type of exercise mimics the actual effect of a stress error. In pairs, Student A asks question (a) or (b). Student B answers. There is immediate feedback if the question was misunderstood.

Question	Answer
a. What's in the dessert?	Sugar.
b. What's in the desert?	Sand.
a. Is it elementary?	No, it's advanced.
b. Is it a lemon tree?	No, it's an orange tree.

Marking Vowel Reduction

In every multi-syllabic word, there is at least one schwa vowel. Students can be asked to listen to words and draw a line through the vowel to show that it is obscured.

Example Exercise

Have students read the following pairs of words and draw a slash through the vowels that are reduced to schwa.

    atom   atomic

    added   additional

    office   official

    legal   legality

Vowel Rules

As explained earlier, vowel distinctions may be more easily learned by listening tasks, while consonants may be mastered more efficiently through speaking tasks (Fucci et al. 1977). Following are examples of progressively more demanding listening exercises for lower level students. Higher level students can use more advanced vocabulary and IPA symbols, if you find that suitable.

Example Exercises

1. Have students listen to sets of three words and identify which word is different. For instance, use the following set of words:

   A. made   B. made   C. mad

   After listening, students must choose the word (A, B, or C) that is different from the other two. Students should be given the opportunity to hear a set of unrelated sound distinctions (e.g., *see*, *see*, *say*) followed by a set of related sound distinctions (e.g., *red*, *reed*, *reed*).

2. Give students a list of word pairs (e.g., *note/not*, *rate/rat*, etc.). Read one word from each pair aloud. Students then circle word they hear.

3. Follow Exercise 2 above with a similar task in which students are given pairs of sentences (e.g., "What does *made* mean?"/"What does *mad* mean?"). Read one

---

sentence from each pair and have students circle the
sentence they hear.

4. Have students work with a partner. Student A chooses
   one of the questions from a pair like the ones below.
   After Student A asks the question (a) or (b), Student B
   tries to answer with the appropriate response.

   a. What does *made* mean?"   The past of *make*.
   b. What does *mad* mean?   Angry.

   a. What does *main* mean?   The most important.
   b. What does *man* mean?   A male person.

Consonants as Grammar Cues

Teachers should use listening exercises that require students to listen for word-
final sounds in order to develop the ability to recognize and interpret the
grammar cues that often occur at the ends of words.

Example Exercise

Have students work with partners. Student A chooses to
say a sentence from a pair like the ones below. Student
B identifies the grammar feature present in Student
A's choice.

Student A says (a) or (b).
a. They share all the food.
b. They shared all the food.
Student B says "past" or "present."

Student A says (a) or (b).
a. Bring your book tomorrow.
b. Bring your books tomorrow.
Student B says "singular" or "plural."

Student A says (a), (b), or (c).
a. They've cut the cake.
b. They'd cut the cake.
c. They'll cut the cake.
Student B says "They have", "They would", or "They will."

Note: For lower level students, each grammatical topic
should be practiced with a number of items in each exercise.
The items above are samples of the different grammatical
topics that might be covered.

Dictation

One of the most useful general techniques for improving listening comprehension is to dictate sentences containing the specific element the student is working on. For example, if you are teaching students to recognize the vowels in peak syllables, you could dictate a sentence like "Did you say *cheese* or *chess*?" Or if the task is meant to increase awareness of the extra syllable required by a final /t/ or /d/ sound, dictate a sentence like "We visited several states and wanted to see even more." Repeat the dictation sentence only twice, then give students the opportunity to check their work with the original sentences. This can alert them to elements they may be hearing incorrectly.

Conclusion

Many other exercises and techniques could be used to teach each of these pronunciation elements. Those presented here are meant to be suggestive. For more exercises and further details about teaching the elements of English prosody, refer to the *Clear Speech* Teacher's Resource Book. The main idea is to use as many visual, kinesthetic, and auditory tools as you can, and to encourage the most realistic interactive use possible of the components of the Prosody Pyramid. All these parts of pronunciation work together to make a speaker comfortably intelligible. Students who gain confidence through practice with "listener-friendly pronunciation" will find English an easier pathway to whatever goals they want to achieve with the language.

Appendix 1:
Pronunciation FAQ

What should be the goal of pronunciation instruction? Should it be native-speaker-like pronunciation?

Pronunciation has traditionally been taught with a goal of "speaking like a native speaker," but this is not practical. In fact, it is a recipe for discouragement both for teachers and for students. This has been referred to as "the perfection trap" (Morley 1992). A more practical approach is to aim for "listener-friendly pronunciation" (Kjellin 1998). This aim makes sense to a student who hopes to achieve something through conversations with native speakers, whether in the social or business sense. If the listener finds that it takes too much effort to understand, the speaker loses out. So mastering the basics of English communication is sensible. Refinements can come later if the student wants to put more effort and time into learning nuances of spoken English.

What should I do if there isn't enough time allotted to pronunciation in our curriculum?

The solution to this problem is to prioritize. Whatever time is available should be spent on elements of pronunciation that provide the most impact. Another way to put this is to make simplicity the key to the curriculum: Too much of a learning burden decreases the impact of a lesson. This means that the teaching focus should be on core elements. If there is time later, attention can be give to other aspects.

Why has pronunciation been neglected for so long?

Unfortunately, the word *pronunciation* tends to make people think exclusively of sounds that get confused, which has traditionally led to dependence on minimal pair drills. Both because this is inherently an unengaging activity, and because the results tend to be discouraging, it takes enormous effort on the part of the teacher to keep a class enthusiastic. Also, teachers tend to think the subject is very technical, since it is often presented that way in teacher training courses. Some teachers try hard to teach pronunciation as if it was a course in phonetics, and this also tends to discourage both teachers and students. Some course books present impractical stress and intonation rules, further burdening the teacher. Actually, the core prosodic structure of spoken English is quite simple and requires little technical terminology. If teachers become aware of the

importance of discourse intonation as a simple foundation system, pronunciation becomes much more rewarding for both teachers and students.

Isn't it easy for children to learn new languages, but hard for adults?

Cruz-Ferreira has addressed this question succinctly:

> Anyone who has had close daily contact with young children along their first years of life knows that language does not come easy to them. There is effort, and quite a lot at that. Learning eventually takes place not because it is inevitable, but because there is motivation, with a clear purpose behind it . . . No matter how deeply anchored the "common wisdom" about learning may be, teaching an old dog new tricks depends not so much on the age of the dog and its brain, as on the perceived usefulness of the trick. (2005, 222)

Don't people just naturally learn pronunciation as they go along?

Some do. But many simply fossilize pronunciation before they reach a threshold level of intelligibility. The disappointment and embarrassment that frequently results from efforts to use what English they have learned can cause students to simply retreat, assuming they are "too old" or "too stupid" or that the other people are rude, impatient, or mean. All of these quite common conclusions result in students who give up. A discouraged student is hard to teach, and giving up guarantees a lifetime handicap.

Is it suitable for a non-native speaker of English to teach pronunciation?

The disadvantage of non-native speaking teachers is that they tend to lack confidence in their own model. They often don't realize that native speaker teachers have quite a different disadvantage: they are unaware of what kinds of elements are difficult. Native speakers tend to assume that all aspects of spoken English (e.g., the uses of pitch and timing) are simply a natural part of human language, so they sometimes hurry over important matters. Non-native speakers, on the other hand, know from their own experience what aspects of spoken English require extra care. If the non-native speaking teacher has good listening recognition skills and a grasp of the Prosody Pyramid structure of English, then remaining elements of an L1 accent are of little importance.

What kind of testing can I use to determine progress?

Tests used for research have a different function than tests appropriate for teaching pronunciation. It is useful to have some way of discovering what kinds of problems are most prevalent in a particular class, but the true purpose of

pre- and post-measurement in a pronunciation classroom should be to provide encouragement. It is not enough for the teacher to assure students that they are improving. Students tend to depend on numerical scores to convince themselves that the effort has paid off. This is easy enough to manage if the skill subject is grammar or vocabulary. But pronunciation is more psychologically sensitive, and harder to score objectively. This means that the elements tested in the pre-test must be intentionally and thoroughly taught, in order to more or less guarantee better scores in the post-test. For research purposes, "teaching to the test" undermines the reliability of the results. But for pedagogic/psychological purposes, teaching to the test is essential: The test must measure what we are going to teach. Put another way, the curriculum that is going to be presented, including prioritizing of topics, must be directly addressed in the pre-testing.

Students get the word order wrong, over and over again. Is there anything I can do in pronunciation to help with this?

The word order of well-learned templates can serve as ways to fix commonly-confused patterns (e.g., "How you spell . . . ?" or "What means this?").

Appendix 2:
Focus Rules and Thought Group Rules

Summary of Focus Rules

Focus Rule 1

The stressed syllable of a focus word is extra long, extra clear, and has a pitch change.

Focus Rule 2

The focus word in a sentence is usually a content word.

Focus Rule 3

Structure words are usually de-emphasized to contrast with the focus word. This contrast makes it easier for the hearer to notice the focus word.

Focus Rule 4

At the beginning of a conversation, the last content word in a clause or sentence is usually the focus word.

Focus Rule 5

After a conversation begins, the new thought in each sentence is the focus word.

Summary of Thought Group Rules

Thought Group Rule 1

There is often a pause at the end of a thought group to signal that the thought group is finished.

Thought Group Rule 2

There is often a fall in pitch at the end of a thought group to signal the thought group is finished.

Thought Group Rule 3

There is one focus word in each thought group.

Summary of Focus and Thought Groups

In the future, if someone has trouble understanding what you have said, try following these steps.

1. Identify the focus words in what you just said.

2. Think about which syllable is stressed in each focus word.

3. Say the sentence(s) again, but make sure that you:
    • Lengthen the vowel in the stressed syllable of each focus word.
    • Make the sounds in the stressed syllable of each focus word very clear.
    • Change pitch on the stressed syllable of each focus word.
    • Group your words together in thought groups by using pitch changes and by using pauses.
    • End complicated or especially important thought groups with an extra long pause, so the listener will have more time to think about what you just said.

<div align="right">(from Gilbert 2005, 138)</div>

Appendix 3:
How Often Do the Vowel Rules Work?

How often does the Two Vowel Rule work?

Letters	Sounds	Percent of time[1]	Examples
-ai -a- + final -e- -ay	/e^y/	95% 90% 93%	rain, train, afraid cake, came, arrange day, say, play, array
-e- + final -e- -ee- -ea- -y	/i^y/	32% 92% 69% 95%	Pete, athlete, recede tree, meet, agreement tea, please, beat, season city, funny, lucky
-i- + final -e- -igh-*	/a^y/	77% 100%	ice, time, white, arrive night, light, high, sigh
-o- + final -e- -oa- -ow-	/o^w/	76% 94% 53%	cone, home, alone coat, soap, approach slow, below, lower, follow
-u- + final -e- -oo-*	/u^w/	94% 88%	blue, juice, accuse room, choose, foolish

How often does the One Vowel Rule work?

Letters	Sounds	Percent of time[1]	Examples
-a-	/æ/	91%	pan, has, aspirin, answer
-e-	/ɛ/	82%	ten, message, medicine, intention
-i-	/ɪ/	93%	is, simple, children, interesting
-o-	/ɑ/	74%	top, hot, problem, confident
-u-	/ʌ/	66%	cup, sun, butter, hundred, assumption

[1] These numbers refer to the percentage of times that this spelling produces this vowel sound, based on multi-syllabic words in a database formed by merging five very large independent American and British frequency counts, including approximately 25 million words of text. (Carney, 1994, p. 104)

* This common spelling does not follow the Two Vowel Rule, but it is included here because it is so often pronounced with the sound shown.

Appendix 4:
Table of Figures

References

Acton, W. 2002. Integrating verbal and nonverbal language enhances pronunciation. TESOL Post Convention Institute.

Anderson-Hsieh, J., R. Johnson & K. Koehler, 1992. The relationship between native speaker judgments of nonnative pronunciation and deviance in segmentals, prosody, and syllable structure. *Language Learning* 49:4, 529–555.

Aoyama, K. & S. Guion. 2007. Prosody in second language acquisition: Acoustic analyses of duration and FO range. In O.-S. Bohn & M. Munro, eds. *Language experience in second language speech learning. In honor of James Emil Flege*, John Benjamins: 281–297.

Ballmer, T. 1980. The role of pauses and suprasegmentals in a grammar. In H. Dechert & M. Raupach, eds. *Temporal variables in speech*. The Hague: Mouton 211–220.

Bolinger, D. 1989. *Intonation and its uses: Melody in grammar and discourse*. Stanford: Stanford University Press.

Bradford, B. 1988. *Intonation in context: Intonation practice for upper-intermediate and advanced learners of English*. Cambridge: Cambridge University Press.

Brazil, D., M. Coulthard, & C. Johns. 1980. *Discourse intonation and language teaching*. London, Longman.

Brown, A. 1992. Twenty questions. In A. Brown, ed. *Approaches to pronunciation teaching*. London: Macmillan 1–17.

Brown, G. 1977, 1990. *Listening to Spoken English*. London, Longman.

Carney, E. 1994. *A Survey of English Spelling*. London, New York: Routledge. 1997. *English Spelling Workbook*. London, New York: Routledge.

Cauldwell, R. 1992. Of streams and bricks: new ways of presenting the spoken language to learners. In *Speak Out! Newsletter of the IATEF Phonology Special Interest Group* 10:29–34.

Chafe, W. 1970. *Meaning and language*. University of Chicago Press.

Chun, D. 2002. *Discourse intonation in L2: From theory and research to practice*. John Benjamins.

Clennell, C. 1999. Using transcription of native speaker interviews to promote pragmatic awareness and spoken discourse skills with EAP (English for Academic Purposes) classes. *ELT Journal* 53 (2): 83–91.

Cruz-Fereira, M. 2005. *Three is a Crowd? Acquiring Portuguese in a trilingual environment*. Multilingual Matters, LTD.

Crystal, D. 1969. *Prosodic systems and intonation in English*. Cambridge University Press.

Cutler A. & D. Norris. 1988. The role of strong syllables in segmentation for lexical access, *Journal of Experimental Psychology* 14:121.

Cutler A. & T. Otake. 1994. Mora or phoneme? Further evidence for language-specific listening. *Journal of Memory and Language* 33:825–844.

Dalton, C. & B. Seidlhofer. 1994. *Pronunciation*. Oxford: Oxford University Press.

Dauer, R. 1993. *Accurate English*. New Jersey: Prentice-Hall.

David, D., L. Wade-Woolley, J. Kirby, & K. Smithrim. 2007. Rhythm and reading development in school-age children: A longitudinal study. *Journal of Research in Learning to Read* 30 (2):169–183.

Derwing, T. & M. Rossiter. 2003. The effects of pronunciation instruction on the accuracy, fluency and complexity of L2 accented speech. *Applied Language Learning*, 13:1–18.

Di Matteo, R., C. Rossi-Arnaud, & B. Tirozzi. 1997. Rhythm processing and entrainment process. In A. Gabrielsson, ed. *Third Trieenial ESCOM Conference Proceedings*. Uppsala University: Department of Psychology 76–81.

Fucci, D., M. Crary, J. Warren, & Z. Bondi. 1977. Interaction between auditory and oral sensory feedback in speech regulation. *Perceptual and motor skills* 45:123–129.

Gilbert, J. 2001. *Clear speech from the start*. New York: Cambridge University Press. *Clear Speech*. 2005, 3rd ed. New York: Cambridge University Press.

Goswami, U. 2003. How to beat dyslexia. *The Psychologist* 16:462–465.

Goswami, U. & P. Bryant. 1990. *Phonological skills and learning to read*. Psychology Press, Hove.

Grant, L. 1995, 2001. *Well said* (2nd ed.). Boston: Heinle & Heinle.

Greenberg, S. 1995. The ears have it: The auditory basis of speech perception. In K. Elenius & P. Branderud, eds. *XIIIth International Congress of Phonetic Sciences* (ICPhS 95) Stockholm, Sweden, KTH and Stockholm University 3:34–41.

Gumperz, J. 1982. *Discourse strategies*, Cambridge: Cambridge University Press.

Hebb, D. 1949. *The organization of behavior: A neuropsychological theory*. New York: Wiley.

Kalmar, T. 2001. *Illegal alphabets and adult biliteracy: Latino migrants crossing the linguistic border*. New Jersey: Lawrence Erlbaum Assoc.

Kjellin, O. 1999. Accent Addition: Prosody and Perception Facilitate Second Language Learning. In O. Fujimura, B. Joseph, & B. Palek, eds. Proceedings of the LP'98 (Linguistics and Phonetics Conference) at Ohio State University, September 1998. The Karolinum Press 2:373–398.

Kondo, Y. 2001. Prosody-based approach to English pronunciation teaching. *Tsuda Review*, No. 46 November: 165–190.

Leather, J. 1983. Second-language pronunciation learning and teaching. *Language Teaching*, 16:198–219.

Lehiste, I. 1977. Isochrony reconsidered. In *Journal of Phonetics* 5:253–263.

Levelt, W. 1989. *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.

McNerney, M. & D. Mendelsohn. 1992. Suprasegmentals in the pronunciation class: Setting priorities. In *Teaching American English pronunciation*, P. Avery & S. Ehrlich, eds. Oxford University Press: 185–196.

Mendelsohn D. & J. Rubin, eds. *A guide for the teaching of second language listening*, Dominie Press.

Miller, S. 2000. *Targeting pronunciation*. Boston: Houghton-Mifflin.

Morley, J. 1992. *Rapid review of vowel & prosodic contexts*. Ann Arbor: University of Michigan Press.

No, G. 2003. Intelligibility and English pronunciation in elementary schools [in Korea] *English Teaching* 58:(1) 201–218.

Ohala, J. & J. Gilbert. 1979. Listener's ability to identify languages by their prosody. In *Problèmes de Prosodie, Studia Phonetica 18*. Didier.

Patel, A. 2008. *Music, language, and the brain*. Oxford University Press.

Pirt, G. 1990. Discourse intonation problems for non-native speakers. In M. Hewings, ed. *Papers in discourse intonation*. University of Birmingham Press.

Rogerson, P. & J. Gilbert. 1990. *Speaking clearly: Pronunciation and listening comprehension for learners of English*. Cambridge University Press.

Thomson, J., B. Fryer, J. Maltby, & U. Goswami. Auditory and motor rhythm awareness in adults with dyslexia. *Journal of research in reading*, 29:(3) 334–348.

Wade-Woolley, L. & C. Wood. 2006. Prosodic sensitivity and reading development. *Journal of Research in Reading* 29:253–257.

Wennerstrom, A. 2001. *The music of everyday speech: Prosody and discourse analysis.* Oxford University Press.

Wood, C. 2006. Metrical stress sensitivity in young children and its relationship to phonological awareness and reading. *Journal of Research in Reading* 29:(3) 270–28.