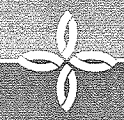
Chapter Six



Phonology

KEY ISSUES

- The sound system of a language
- Transfer of the first language's phonological rules to a second language
- Distinctive sounds that make a difference
- Permissible arrangements of sounds within a language
- Problematic sound distinctions
- Pitch, stress, tones, and relaxed pronunciation

SCENARIO

Three English Language Learners (ELLs) were standing on a mountaintop. One said, "It's windy," and the other responded, "No, it's Thursday." The third student chimed in, "Yes, let's go and get a drink!"

What phonological explanations can you offer for the above conversational miscommunication?

Now examine the production of sounds in English phonology in the following sentences.

1. Say the word ***fan***. How is the first sound of this word produced? The /f/ sound is produced by putting the top teeth and the bottom lip together, and blowing air between them.
2. Say the word ***were***. This whole word is produced with one continuous motion of the vocal tract (lungs, tongue, lips, and so on), yet we perceive the production of this word as three separate speech sounds, /w-e-r/.
3. The words ***hoe***, ***sew***, ***so***, and ***dough*** all have the same vowel, even though the vowel is spelled differently in each.
4. The sounds /**m**/ and /**b**/ are alike in that they are both produced by pursing the lips; /b/ and /g/ are different in that /g/ is not produced with the lips.
5. The vowel sound in the word ***fad*** is longer than the same vowel sound in ***fat***.

Example 1 shows that humans use the vocal tract to produce speech sounds. Example 2 represents the fact that words are psychologically viewed as a series of discrete units called segments, even though, physically, they are produced with one continuous motion. Example 3 displays the fact that a single segment can be spelled in a variety of ways because sound and letter correspondence in English is inconsistent; therefore, the phonemic alphabet is used in place of the English alphabet so that each symbol represents one sound. Example 4 shows the fact that smaller units called *distinctive features* are contained within each segment. Thus, /m/ and /b/ have the same distinctive feature; i.e., they are labial sounds because they are produced using both lips, whereas /b/ and /g/ do not share the same distinctive feature. Substituting /m/ in the word *bat* will result in a different meaning. Example 5 illustrates that the same vowel /a/ can be lengthened in one context but shortened in another. Thus, the same vowel /a/ is pronounced differently in different contexts—long in *fad* but short in *fat*. Examples 1–5 are phonological in nature. In other words, the production of these sounds is governed by underlying phonological rules within the English sound system.

WHAT IS PHONOLOGY?

Phonology is the study of the sound system of a language. It also deals with the rules that govern pronunciation and studies the function and patterning of the sounds of a language.

There are some sounds and sound combinations in English that are not heard or differentiated by non-native speakers, who may have difficulty in producing them. The sounds of English that are mispronounced by non-native speakers oftentimes become a source for jokes and laughter in stand-up comedy. Examine the following dialogue.

Non-native speaker: *Hey, can you pass me the flying pan?*

Native speaker: *I'm sorry. You want what? A frying pan?*

In Chinese, the /r/ sound is not found in unit sound clusters such as /fr/, as in *fried*, or /wr/, as in *wrong*, or /spr/, as in *spring*. Most Chinese speakers of English have difficulty with the pronunciation of /wr/, /fr/, and /str/ sound clusters. Native Chinese speakers who are beginning learners of English will pronounce the words *spring*, *fried*, and *strawberry* as /spliŋ/, /fleyd/, and /stlɔbɛli/. Moreover, because in English not all sounds have one-to-one correspondence of sound and orthography, non-native speakers often are unsure of the correct English pronunciation, and thus transfer L1 phonological rules to L2, thereby mispronouncing words in English. For instance, the word *occupy* with the letter *c* in the middle is pronounced with the /k/ sound. However, in the word *proceed*, the letter *c* in the middle position does not take the sound /k/, but instead the sound /s/.

When these isolated mispronunciations occur in sentences that contain other words from which the listener can guess the meanings, communication is not hindered. However, frequent mispronunciations alongside heavily accented words can be major obstacles in communication.

Why are non-native speakers unable to pronounce native sounds of a language as shown in the examples above? Native speakers of any language are generally exposed only to the sounds of their language from birth; they only hear and use the sounds of their native language. Although linguists purport that when a baby is born, he or she has the capacity to hear all the sounds of any language in the world, they also state that as children grow up they will only have formed the connections in the brain for their native language sounds. Because other sounds are not heard or reinforced, connections for these sounds are not formed and will die away. This is why non-native speakers of any language may have difficulty in producing the sounds of a target language they are learning.

DESCRIPTION AND ARTICULATION OF CONSONANTS AND VOWELS

The earlier scenarios of non-native speakers encountering difficulties in producing English sounds can be further understood when we examine the sounds that make up a language, called phonemes, and minimal pairs. Phonemes are distinctive sound units that "make a difference" when sounds form words. Minimal pairs are words that differ by only one phoneme. Examples of minimal pairs in English are /pɪn/ *pin* and /bɪn/ *bin*; /stet/ *state* and /sted/ *staid*; /tɛn/ *ten* and /dɛn/ *den*. In Chinese, /ti/ and /di/ are minimal pairs, the former meaning *tears* and the latter *earth*; in Malay *sayang* and *dayang*, the former meaning *love* and the latter *princess's maids*. While in English, /p/ and /b/ sounds are distinguishable, they are not in Arabic. Arab speakers will say *barking lot* instead of *parking lot*, and *bile* instead of *pile*. English speakers are unable to say the word *nyamuk* (mosquitoes) as the Malays do, because English does not have nasalized sounds in word initial position. The /b/ and /v/ sounds are indistinguishable for some Spanish speakers when /v/ occurs in a medial position; therefore, some Spanish speakers who attempt to say /baklava/ will substitute the /v/ with a /b/ sound in the third syllable, producing /baklaba/ instead.

PHONOTACTIC CONSTRAINTS

In studying phonology it is important to note that each language has permissible ways in which phonemes can be arranged. This permissible arrangement is called phonemic sequence. Each language allows only specific sound combinations at initial, mid, or final positions. In English, there can be a single sound in a word, such as *oh*, or multiple consonants can occur successively in final position in a word, such as *texts* /tɛksts/—CVCCCC; three consonants can occur successively in initial position, such as in words like /spriŋ/ *spring* and /striŋ/ *string*—CCCVC. It becomes more complicated when there are only permissible combinations in consonant clusters; for instance, in English there is a word *draft* but

not *sraft*; /dr/ is a consonant cluster in English, whereas /sr/ is not. In Spanish, it is permissible to have the *s* cluster such as /sp/ occur in mid position, as in the word *español*, but never in initial position. This may explain why Spanish native speakers may say *espoiled* for *spoiled* or *espace* for *space* when speaking English.

How can we help non-native speakers of English with their difficulty in producing words with initial and final consonant clusters that are permitted in English? The most troublesome initial consonant clusters for the largest number of non-native English speakers seem to be those consisting of an initial /s/ followed by one or more other consonants. This large group includes /sf/, /sk/, /sl/, /sm/, /sn/, /sp/, /st/, and /sw/. To compound the problem for non-native speakers of English is the three-consonant clusters at the initial position of words such as /str̲iŋ/ *string* and /sk̲ræp/ *scrape* and /sk̲wɛr/ *square*. The above examples of initial consonant clusters violate the phonotactic rules of a number of languages, such as Chinese, Japanese, and Iranian.

Two- and three-consonant clusters in word final position also pose a problem for non-native speakers of English. Let us examine some of these sound combinations in the following words: /lb/ *bulb*, /gd/ *tagged*, /nd/ *cleaned*, /vd/ *lived*, /lf/ *self*, /rvd/ *carved*, /mps/ *camps*, /ŋks/ *links*.

Prator and Robinett (1985) suggest two ways of making clusters easier for non-native English speakers to pronounce. First is the process of phonetic syllabication and second is the omission of consonants. Phonetic syllabication can occur when a word ends in a consonant sound and the following word begins with a vowel, as in the sequences *has it* /haezɪt/, *hide 'em* /haydəm/, and *give up* /gɪvəp/. In these examples, it is suggested that the final consonant of the first word be pronounced at the beginning of the second word: /hǽ-z̲ɪt/, /háy-d̲əm/, /gɪ-v́əp/. In the same way, the last consonant of a final cluster can be moved forward and pronounced with the vowel of the following word. *Find out* can become /fayn̲-dáwt/, *Sixth Avenue* /sɪks̲-ǽvənyuw/, and *changed address* can become /čeynǰ-dədrés̲/. Two-consonant clusters are thus reduced to single consonants, three-consonant clusters to two-consonant clusters, and four-consonant clusters to easier, three-consonant clusters. Proper use of phonetic syllabication can not only facilitate a student's pronunciation, it can also do much to make his or her English sound more authentic. The second way to make consonant clusters more pronounceable is simply to omit one of the consonant sounds. Native speakers of English do this more often than they realize: for example, many commonly pronounce *arctic* as /ártɪk/, omitting the first c̲. Probably everyone omits the difficult p̲ in *raspberry*, which is normally pronounced /rǽzbér̲ɪ/. Such omissions happen most frequently and are least noticeable in final three-consonant clusters when the middle consonant (the sound that is omitted) is a voiceless stop: *acts* /aek̲ts̲/ becomes /aek̲s̲/, *lifts* /lɪf̲ts̲/ becomes /lif̲s̲/, *asked* /æs̲kt̲/ becomes /aes̲t̲/. These are some ways to assist non-native speakers of English to overcome their problems with the pronunciation of words with initial and final consonant clusters.

Phonemes can be classified into two main categories: consonants and vowels. The third category of sounds that resemble both consonants and vowels is called semivowels. Consonants are made when the airflow is partially or completely obstructed in the mouth by the placement of the tongue and the positioning of the lips. Voiced and voiceless consonants are differentiated by the vibration felt when the larynx is touched. For example, /s/ does not produce any vibrations, while the production of /z/ produces vibration of the vocal folds (muscles). English consonants can be recognized by three modifications to the airstream: the place of articulation of the consonants, the manner in which the airstream is blocked, and voicing. Refer to Figure 6.1 for places and manner of articulation for consonants. Refer to Table 6.1 for consonant symbols and sample words. In the production of vowels, the airflow in the vocal tract is not blocked. English has fourteen vowels and five diphthongs. Diphthongs are two vowels that make up one phoneme. Vowels can be described using these characteristics: height, tongue advancement, lip rounding, tense (long)/lax (short). Look at Figure 6.2 for symbols, and Table 6.2 for sample words for vowels and diphthongs. For example, using the

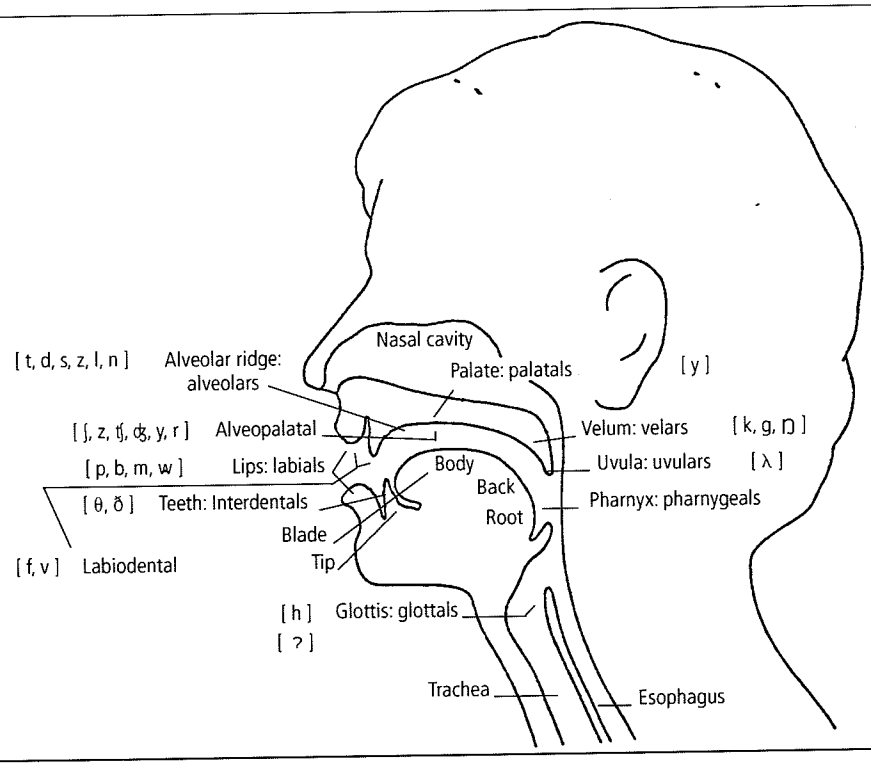


FIGURE 6.1 Places of articulation are listed, followed by a term used to describe sounds made at each place. Areas of the tongue are also provided.

TABLE 6.1

The International Phonetic Alphabet Symbols for American English Phonemes

Symbol	Sample Words	Symbol	Sample Words
Stops		*Affricate*	
[p]	pot, top, staple	[ʧ]	choke, batch, catching
[b]	bet, globe, dabble	[ʤ]	judge, cojole, page
[t]	tip, pat, staple		
[d]	dense, body, guard	*Nasals*	
[k]	can't, chemistry, kick	[m]	moose, comb, coming
[g]	garden, again, get	[n]	nine, banner, snow
[ʔ]	uh-oh	[ŋ]	sing, wringer, prong
	button, mitten (in some dialects)		
Fricatives		*Liquids*	
[f]	fan, coffee, enough	[l]	leaf, hill, piling
[v]	van, dove, gravel	[r]	ran, terrain, stare
[θ] theta	through, teeth, ether	[ɹ] flap	written, bitter, liter
[ð] epsilon	the, either, leather		
[s]	sweet, bask, fuss	*Glides*	
[z]	zip, design, kisses	[w] voiced	witch, worm, with
[ʃ]	shred, bashful, mesh	[j]	exhume, yoke, lawyer
[ʒ]	measure, vision, casualty	[ʍ]	what, whale, white (in some dialects)
[h]	who, cohort, ugh		

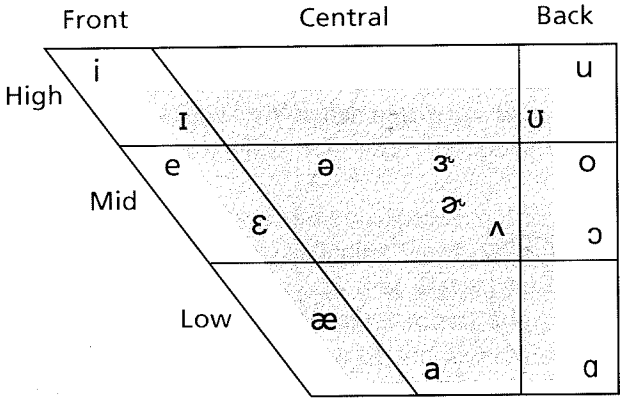


FIGURE 6.2 The vowel quadrilateral. Non-colored: tense vowel. Colored: lax vowels

vowel characteristics, let us describe the vowel /e/. Refer to Figure 6.2:

/e/ Description
Height: high-mid
Advancement: front
Lip rounding: retracted
Tense/lax tense

The information on the manner and place of articulation that phonologists provide is important for teachers of non-native speakers of English.

For example, some consonants in English are pronounced with a stronger release of air, such as the /p/ in *pin*. A lighted match placed close to the lips would be put out. However, there is less aspiration in the /sp/ cluster in *spin*. Nevertheless, aspiration is not a distinctive phoneme in English. Some languages may not produce this sound in the same manner that English does. For example, aspiration is a distinctive feature of the Khmer language—[p^ha]: *father* and [pa]: *silk cloth*. Likewise, when the place of articulation is changed even slightly, the word may not sound correct. For instance, pronounce the word *tin*. Now, move your tongue as far back as you can and pronounce this word again. Continue to place your tongue at different positions and pronounce the same word. What do you notice? In some languages, consonants are pronounced in a more forward position than in English, while in others, the places of articulation are further back in the mouth. The difference in the place of articulation contributes to one of the many qualities that make up "foreign accents." Tables 6.3 and 6.4 contain examples of sounds that may pose problems for non-native English speakers, as well as some sounds in different languages that native English speakers have difficulty producing.

TABLE 6.2

The Different Sounds of English Vowels in Sample Words

Symbol	Sample Words
Vowels	
[i]	beat, we, believe, people
[ɪ]	bit, injury, business
[e]	bait, reign, great, they
[ɛ]	bet, reception, says, guest, bury
[æ]	bat, laugh, anger, rally
[u]	boot, who, sewer, through
[ʊ]	put, foot, butcher, could
[o]	boat, beau, grow, though, over
[ɔ]	bought, caught, wrong, stalk
[a]	pot, father, far, car
[ʌ]	but, tough, another
[ə]	among, focus, sofa
[ɝ]	bird, her, stir
Diphthongs	
[au]	how
[ai]	tie
[ɔɪ]	boy
[eɪ]	bake
[ou]	rose

Spanish Speakers of English

Spanish and English differ in their phonemic system, both in terms of vowels and of consonants. English has fourteen vowel sounds and five diphthongs approximately, and Spanish has only five vowel sounds. Because of this, Spanish speakers of English will always experience difficulty with vowel production due to interference. For example, the word *pick* will be pronounced as /pik/, because /ɪ/ is nonexistent in Spanish. Other examples are *bake, tack, good, hope*. In *bake,* vowel /ei/—/e/; in *tack,* /ae/ —/a/; in

TABLE 6.3

Problematic Sound Distinctions in English for Spanish and Haitian-Creole Speakers

The first sound is the problem sound; the second is the substituted sound.

Consonant	Spanish	Haitian-Creole
v/b	x	
θ/s (theta)	x	x
ʃ/ʧ	x	x
j/ʤ	x	
ʤ/j	x	
s/z	x	
θ/z (theta)		x
ð/d (epsilon)	x	
m/ŋ	x	
n/ŋ	x	x
w/g	x	
r/w		x

TABLE 6.4

Problem English Vowel Contrasts for Spanish Speakers

English	Problem Contrast	Spanish
/e/—ate /ʌ/—after	A	/a/—pluma (pen)
/i/—even or /ɛ/—every	E	/ɛ/—enero (January)
/aɪ/—ice or /ɪ/—sick	I	/i/—libro (book)
/o/—open or /ʊ/— move	O	/o/—blanco(a) (white)
/ju/—use or /ʌ/—under	U	/u/—nuevo(a)

good, /ʊ/—/u/, in *hope*, /ou/—/o/. Not all vowel productions are caused by interference; for instance, for the word *feet,* Spanish speakers say *fit,* the substitution of /i/ for /ɛ/ is not caused by interference (Perez, 1994). Other similar examples are in words such as *men (/ɛ/—/ae/), room (/u/—/ʊ/), and some (/ʌ/—/a/).*

Some examples of common consonant interference are: with, /wit/; those, /douz/; vine, /baɪn/; shoe, /ʧu/, yes, /jɛs/. Refer to Table 6.5 for more examples of Spanish-influenced English vowel and consonant productions.

TABLE 6.5

Common Spanish-Influenced English Vowel and Consonant Productions

English Word	Spanish-Influenced English Transcription	Phonological Pattern
Vowel Articulations		
lid	/lid/	ɪ → i
need	/nɪd/	i → ɪ
mate	/met/ (will sound similar to /ɛ/	eɪ → e
late	/lɛt/	eɪ → ɛ
tennis	/teɪnɪs/	ɛ → eɪ
dead	/dæd/	ɛ → æ
bag	/bɑg/ or /bɛg/	æ → ɑ or ɛ
look	/lʊk/	ʊ → u
pool	/pʊl/	u → ʊ
boat	/bot/ (will sound similar to /ɔ/	oʊ → o
bug	/bɑg/ or /bag/	ʌ → ɑ or a
word	/wɛrd/	ɜˑ → ɛr
Consonant Articulations		
think	/tiŋk/	θ → t stopping
them	/dɛm/	ð → d stopping
vase	/bes/	v → b stopping
you	/ʤu/	j → ʤ affrication of a glide
sheep	/ʧip/	ʃ → ʧ affrication of a fricative
choose	/ʃuz/	ʧ → ʃ deaffrication
just	/jʌst/	ʤ → j deaffrication
zoo	/su/	consonant devoicing
was	/wʌs/	consonant devoicing
spot	/əspat/ or /ɛspat/	epenthesis of /ə/
leaks	/lik/	reduction of word-final consonant clusters

Source: Adapted from Penfield & Ornstein-Galicia, 1985; Perez, 1994; Wise, 1957.

Asian Speakers of English

Tables 6.6 and 6.7 summarize common consonant and vowel productions spoken by Asians/Pacific Islanders (Mandarin Chinese, Cantonese, Vietnamese, Korean, Japanese, and Filipino). Several Asian languages are tone languages and intonation is considered phonemic since each tone has a different meaning. In contrast, intonation in English conveys the speaker's mood or intent, statement, or question. There are fewer words that end with consonants in Mandarin Chinese and Cantonese than in English, so Asian speakers of English will delete the final consonants of English words, as they are just transferring their L1 rule to English—applying a no-consonant-endings rule as in their L1. Another important difference between English and most Asian languages is the issue of grammatical rules and phonology.

The phonological system of Chinese is very different from that of English. Some English phonemes do not have Chinese counterparts and are hard to learn. Others resemble Chinese phonemes but are not identical to them in pronunciation, and thus cause confusion. Stress, intonation, and juncture are all areas of difficulty. In general, Chinese speakers find English hard to pronounce, and have trouble learning to understand the spoken language (de Jong, 2006),

TABLE 6.6

Common Consonant Productions for English Phonemes, as Spoken by Chinese, Vietnamese, Korean, Japanese, and Filipino Speakers (Mandarin and Cantonese dialects of Chinese are shown separately)

Intended Phoneme		Observed Phoneme					
		Cantonese	Mandarin	Vietnamese	Korean	Japanese	Filipino
Fricatives	θ	s, f	s, f	s		s, z	t
	ð	d	z, d		ʤ	z, j	d
	ʃ	s		s, t	s		s
	ʒ					ʤ, ʃ	d, ds
	f	~		p		h	p
	v	f, w	f, w		b, p	b	b
	z	s		s	s	dz, ʤ, s	s
Affricates	ʧ		ʃ	s, t, ʃ	t		ts
	ʤ	z		ʒ			ds
Liquids	r	l	l	z	l		
	l		r	n	r	r	

Source: Adapted from Baker, 1982; Cheng, 1987a, 1987b, 1994; and Shen, 1962.

TABLE 6.7

Some Common Vowel Productions in Asian/Pacific Influenced English

Chinese	æ → e or ɛ; ɛ → e; ɪ → i; ɔ → o; ʊ → u; ʌ → ɑ /ə/ is added to consonant clusters
Vietnamese	ɪ → i; æ → ʌ; ʊ → u
Korean	Problems with the production of /i/, ɪ, u, and /ɔ/
Japanese	Epenthesis of the vowels /ə/ or /u/ to the ends of syllables and words. (Most Japanese words end in an open syllable.) ɪ → i; æ, a or ə → ɑ; ɚ → ɑ; ʊ → u; ʌ → æ; eɪ → e; æ → ɛ
Filipino	Tensing of lax vowels, i.e., ɪ → i; ʊ → u; ɔ → o

Source: Adapted from Baker, 1982; Cheng, 1987a, 1987b, 1994.

There are more vowel contrasts in English than in Chinese, so English vowels are closer to each other in terms of position of articulation than Chinese vowels. This means that more effort is required to distinguish them. For instance, the contrast between /i:/ and /I/ has no equivalent in Chinese. Learners confuse pairs such as *eat* and *it, bean* and *bin.* The same applies to /UI/ and /u/, leading to confusion, for instance, between *fool* and *full, Luke* and *look* (de Jong, 2006).

As for consonants , in the three pairs of stops /p/ and /b/, /t/ and /d/, /k/ and /g/, the unaspirated group /b/, /d/, and /g/ are voiced in English but are on the whole voiceless in Chinese. Chinese students tend to lose the voiced feature in speaking English. /v/ is absent from most Chinese dialects. As a result, it is sometimes treated like /w/ or /f/: *invite* may be pronounced "inwoite"; *live* pronounced /lif/. Many Chinese dialects do not have /n/. Learners speaking these dialects find it difficult to distinguish, for instance, *night* from *light.* /θz/ and /ðd/ do not occur in Chinese. /ʤ/ is likely to be replaced by /t/, /f/,or /s/, and /ð/ by /θ/or /z/. So for example, *thin* may be pronounced *tin, fin,* or *sin; this* may be pronounced /dis/ or /zis/

Pitch changes in Chinese (the "tones") are mainly used to distinguish words whose pronunciation is otherwise the same; sentence intonation shows little variation. The English use of intonation patterns to affect the meaning of the whole utterance is therefore difficult for Chinese to grasp. Unfamiliar with these patterns, Chinese learners tend to find them strange and funny. Some add a tonic value (often a high falling tone) to individual syllables. Thus their speech may sound flat, jerky, or "singsong" to English ears (de Jong, 2006).

In Chinese, each printed character is only one syllable in length; therefore, Chinese speakers of English may pronounce multisyllabic words syllable by syllable in a telegraphic, or faltering, manner (Small, 2005).

Arabic Speakers of English

Unlike English, which has 14 vowel sounds and five diphthongs, Arabic has only three vowels, /i/, /a/, and /u/, in short and long forms. The diphthongs in Arabic are /ei/ and /eu/. Several English consonants do not exist in Arabic, such as the stops /p/ and /g/, the fricatives /v/ and /ʒ/, and the nasal /ŋ/ (*Handbook of the International Phonetic Association,* 1999). Also, in Arabic there are no two or three consonant clusters at the beginning of a word, so Arabic speakers of English will pronounce the word *scream* and *street* as /sikrim/ and /sitrit/—adding a vowel between consonants. Sometimes, Arabic speakers will also pronounce silent letters in English since the Arabic alphabet is phonemic. For example, the words *knot, could,* and *lamb* will be pronounced as /knɔt/, /kuld/, and /laemb/. In English, the /c/ can take on different sounds depending on the surrounding sounds; for example, in the words *city, proceed,* and *proclaim,* /c/ is pronounced as /s/, /s/, /k/. For Arabic speakers of English, they may pronounce the word *city* as /kiti/ and the word *soccer* as /sɔsə/.

Table 6.8 summarizes common Arabic-influenced English vowel and consonant productions.

Other problems learners of English have are demonstrated by words that have allophones, i.e., sound variants of the phonemes.

Say these words and note how the /t/ is pronounced in each word.

bottle	(ʔ glottal, t,)
kitten	(ɾ, flap)
stop	(non-aspirated)
top	(aspirated)
hunter	(/t/ is not pronounced in some regional dialects)

PITCH, STRESS, AND RELAXED PRONUNCIATION PATTERNS

Other sound qualities like pitch and stress are also important in the formation of sounds. In English, pitch and stress are important in distinguishing meaning within a sentence. For instance, "José is going to the movies," as a statement, is said with a falling pitch, but when it is used as a question, the pitch rises at the end. Intonation is the rising and falling pitch in a language that does not change word meaning, but changes the function of a sentence.

TABLE 6.8

Common Arabic-Influenced English Vowel and Consonant Productions

English Word	Arabic-Influenced English Transcription	Phonological Pattern	English Word	Arabic-Influenced English Transcription	Phonological Pattern
Vowel Articulations			*Consonant Articulations*		
brought	/brot/	ɔ → o	party	/bartɪ/	p → b
bit	/bet/	ɪ → e	very	/fɛrɪ/	v → f
because	/bikuz/	ʌ → u	thin	/sɪn/	θ → s
cup	/kæp/	ʌ → æ	lesion	/liʃən/	ʒ → ʃ
set	/sæt/	ɛ → æ	witch	/wɪʃ/	ʧ → ʃ
bread	/brid/	ɛ → i	Jim	/ʃɪm/	ʤ → ʃ
note	/nat/	o → a	bathe	/bez/	ð → z
			think	/θɪnk/	θ → t
			scream	/sikrim/	epenthesis of i

Source: Adapted from Altaha, 1995; Baker, 1982; Power, 2003b.

Patterns of intonation in English are said to resemble waves, with the crest of the wave over those syllables with the greatest stress. Intonation acts very much like punctuation in a sentence; emotions such as anger and impatience are signaled by intonation patterns. However, there are many languages that use pitch in individual syllables to contrast meaning; these languages are called tonal languages. There are more than 1,000 tonal languages in Africa alone. Chinese, Thai, and Burmese are also tonal languages, as are many Native American languages (Fromkin-Rodman, 1983). In Mandarin Chinese, the sound /ma/ when used with four different tones produces four different meanings: *horse*, *mother*, *hemp*, and *scold*. The word /mai/ can mean buy or sell.

Like pitch, stress also modifies the meaning of words. In English, stress indicates the part of speech of a particular word. Look at the following examples:

Where would you put the stress on the word used in both sentences?

1a. Carol's conduct at the party was the talk of the town.
1b. Carol will conduct a popular orchestra at the opening ceremony.
2a. McCoy is the meanest rebel in the group.
2b. McCoy and Kazaski rebel against the top members of the organization.

Can you figure out the rule for stress placement in the above examples?

Word stress at the sentence level can also change the intended meaning within a sentence.

For example,

H/e' did that? (Who did that?)
He d/i'd that? (Did he do that?)
He did th/a't? (What did he do?)

Each statement asks a different question depending on which word is stressed.

Native speakers are seldom taught the explicit phonological rules in their native language, yet they know them. Speakers of any language have different styles of speaking: formal to informal to casual. In English, casual or relaxed speech has three forms in the pronunciation of words: (a) contractions, (b) "dropping" of sounds, and (c) changing of sounds. Examine the following examples of these three categories.

A. Contractions
   1. *Who'd do that?* (Who would do that?)
   2. *We've been there.* (We have been there.)

B. "Dropping" of sounds
   1. *Eat 'em.* (Eat them.)
   2. *She's changin' her clothes.* (changing)

C. Changing of sounds

In English, changing of sounds occurs when the final sound of one word and the beginning sound of the following word combine to make a third sound. Examples are:

1. *Did you do it?* (j → ʤ) or
2. *Is your brother home?* (j → ʒ)

APPLYING PHONOLOGY IN THE CLASSROOMS

How do teachers apply these phonological concepts when teaching ELL? Understanding that phonemes are individual units of sound in words is having phonological awareness (PA). Skills within PA are concept of spoken word, rhyme, syllables, phonemes, and phoneme manipulation. Children become fluent readers by learning to manipulate these sounds. Phonemic awareness falls under the umbrella of phonological awareness, though phonemic awareness and phonological awareness are used interchangeably. Research has shown that phonemic awareness is the best single predictor of reading ability in kindergarten, followed by knowledge of letter names and kindergarten teacher predictions (Zgonc, 2000). Phonemic awareness is the first component of effective reading instruction (Zgonc, 2000). Children need solid phonemic awareness training in order for phonics instruction to be effective (Blevins, 1997).

Using the following sample activities, children are taught the following PA skills (Zgonc, 2000):

- **Concept of spoken word:**
  (sentence segmentation):
  The ability to distinguish words in a sentence. Example: *Juan likes oranges.* (three words) Teachers can use counters (edible ones make cleaning up easier) when teaching this concept. Determine the number of words in the sentences that will be read to students. Give students five counters if you are reading sentences with three to five words. Ask students to lay the counters on their desk and push them up when they hear the words in the sentences. So, for the above example, students will push up three counters. Sentence segmentation is an important skill to teach ELL because, being new to the sounds of English, the words in the sentence may sound as one long word to them.

- **Rhyme:**
  The ability to recognize rhyme, complete rhyme, and produce rhyme. Example: *Does hall rhyme with ball?* The teaching of this concept brings in the knowledge of minimal pairs—substituting the phoneme /h/ in /hall/ with /b/ changes the word meaning. An activity for this skill is to distribute two tongue depressors to the students. Have students draw a happy face on one and a sad face on the other. Call the happy face "Happy Harry" and the sad face "Sad Sandy." Read to the children some words with minimal pairs that rhyme and some words that do not rhyme. When they hear the rhyming words, children will hold up "Happy Harry" and when they hear ones that do not, they will hold up "Sad Sandy." Some possible word sets are: *bet-get, go-me, fan-pan, cake-take, gold-back, big-dig, dust-must.* This is a good way to find out if ELL students can hear and are able to distinguish sounds. As was mentioned earlier in the chapter, some Arab speakers of English do not make a distinction between /b/ and /p/, and some Spanish speakers do not distinguish /v/ and /b/; therefore, this will be a good assessment activity.

- **Syllables:**
  The ability to blend, segment, and delete syllables. The activity for the teaching of this concept is to ask students to clap the word parts; for example, use their names: Claudia (three claps), John (one clap). Learning about syllables is a prerequisite for ELLs to put stress correctly on words. This particular activity will help the

Chinese speakers of English whose L1 has one syllable per character.

- **Phonemes:**
  The ability to recognize problematic sounds for ELL. Chinese speakers of English have a difficult time pronouncing consonant clusters such as /spr/ and /fr/, and Spanish speakers have difficulty with /ʃ/, /j/, /ʤ/. An example activity is making digraphs useful by using cross-checking meaning. Write a sentence with /s/ words and compare that to a sentence with a word /spr/. *Chen is sad. Hua is high-spirited.* For Spanish speakers who substitute /t/ for /θ/, use the same activity—*Maria thinks Anna is pretty. Francisco talks a lot.*

Teachers who possess knowledge of phonology will understand the difficulties faced by English Language Learners (ELLs) in producing English consonant and vowel sounds that are nonexistent in their language. They will not be overly frustrated about students' errors or insist on frequently correcting their students' mispronunciations and misspellings. Instead, they will focus on the problem sounds that ELLs have by using their knowledge of the place and manner of articulation of English sounds to demonstrate to students how these sounds are produced.

POINTS TO REMEMBER

- ✓ Phonology is the study of the sound system of a language. It deals with the rules that govern pronunciation.
- ✓ Children growing up in their first language environment have formed only the connections in the brain for their native sounds.
- ✓ In phonology it is important to note that each language has permissible ways in which phonemes can be arranged. This permissible arrangement is called *phonemic sequence.*
- ✓ Phonemes can be classified into two main categories: consonants and vowels.
- ✓ Pitch and stress are important in distinguishing meaning within a sentence in English.
- ✓ Tonal languages use pitch as individual syllables to contrast meaning.
- ✓ Speakers of any language have different styles of speaking: from formal, to informal, to casual. In English, casual or relaxed speech takes three forms in the pronunciation of words: (a) contractions, (b) "dropping" of sounds, and (c) changing of sounds.