

HANDBOOK FOR SPEECH THERAPY

by Vee L. Medlin



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PREFACE

I have written this book for students. It is the book I wished I had had available to me in my first year of speech pathology. Learning should be exciting. Yet enthusiasm can be squelched rather quickly when dull and poorly organized textbooks put us to sleep and impede the quest for knowledge. Many of us have spent more time looking for the basic information than learning it.

Beginning students need a handbook of basic information for quick and easy reference. Technical vocabulary, used so glibly by authors and teachers, can confuse the student still struggling with textbook definitions.

Theory is interesting and teaching techniques are important, but neither are of much value if the clinician does not know *what* to teach. Basic to all other information is a clear understanding of speech sounds: how they are made, their individual characteristics, their relationships to each other, and the most common errors and how to correct them.

I have gathered information about the sounds from many different books in the fields of speech pathology, speech science, and the teaching of the deaf. I always disliked having to gather material for notebooks. It took so much time away from studying.

The balance of the book is made up of an outline of the classical way of teaching, plus an introduction to behavior modification. Reading references are given for further study in this new and promising area.

Technical terms, plus abbreviated aids to learning are written in the wide margins. This provides an outline and quick review of the material. In addition, a glossary of terminology is provided.

I wanted wide margins for notes, readable type, and color coded illustrations. Lynn Freeman has worked long and hard to make this dream a reality.

I hope this book makes learning a little easier and teaching more productive.

Vee L. Medlin

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Chapter 1

AN ALPHABET OF SOUNDS

speech sounds Speech is an expression of human thought and emotions by speech sounds and gestures. It is these **speech sounds** that we are going to study first.

When we think about speech sounds, we usually visualize the twenty-six letters of the alphabet, i.e., “Aye, Bee, Cee, Dee,” etc. Yet when we are speaking, we do not use these letter names. We use the sounds symbolized by the letters. Thus, the letter, “b”, is called, “Bee,” in the alphabet, but it is the symbol for the sound [b] as in *boy*.

We were taught that speech sounds are divided into consonants and vowels, and our English language contains five vowels: *a, e, i, o, and u*.

consonant A **consonant** is formed by stopping or altering the breath stream to produce various sounds. A consonant never stands alone, as a vowel sometimes does. It is always paired with a vowel to form speech syllables.

vowel A **vowel** is a cavity shaping movement formed without stopping or interfering with the outgoing breath stream in any way. Every speech syllable contains a vowel.

diphthong
see page 8 While we may have only five vowel letters, we have fifteen pure vowel sounds plus nine diphthongs (adjacent vowels in the same syllable). However, it is the twenty-five consonants which make our speech intelligible, and it is the consonants that a speech pathologist spends most of his time teaching.

As we go through the alphabet, we shall talk about the consonant sounds represented by the letters. Since we are considering consonant sounds only, the first thing to do is to cross out the five letters representing the vowels: *a, e, i, o, and u*. (The letters, *y* and *w* may represent either a vowel or a consonant sound.)

~~a~~ *b c d* ~~e~~ *f g h* ~~i~~ *j k l m n* ~~o~~ *p q r s t* ~~u~~ *v w x y z*

This leaves twenty-one letters to represent the twenty-five consonant sounds. Taking the letters one by one, let's examine the relationship between the spoken sounds and the English spelling.

[b] The first letter, *b*, is pronounced [b] as in *boy*. Notice that whenever we speak of a sound, square brackets are placed around the letter symbolizing the sound.

CAUTION It is very difficult to pronounce an exploding consonant without adding a vowel, usually, “uh.” Be aware that the “uh,” is a vowel and not part of the consonant sound.

c = $\begin{cases} [k] \\ [s] \end{cases}$

The letter, c, is superfluous since it has no distinctive sound of its own. It is either pronounced [k] as in *cat*, *cook* and *color*, or it is pronounced [s] as in *celery*, *ceiling* and *cent*. (Once in a while it is even used for other sounds, such as the “ch” or [tʃ] sound in *cello*.) We shall cross this letter off.

~~a~~ b ~~d~~ ~~f~~ g h ~~j~~ k l m n ~~p~~ q r s t ~~v~~ w x y z
b

[d] [f]

The letters, d and f, have one sound each: [d] as in *dog* and [f] as in *fish*.

g = $\begin{cases} [g] \\ [g] \\ [dʒ] \\ [h] \end{cases}$

The letter, g, represents two sounds; the “hard g” as in *gate*, *get* and *go*, and the “soft g” as in *gym*, *giraffe* and *gypsy*. In teaching speech, we use the symbol “g” to represent only the [g] sound in *go*. The second sound we shall talk about later.

The letter, h, has only one sound, [h] as in *hello*, *high* and *hot*.

~~a~~ b ~~d~~ ~~f~~ g h ~~j~~ k l m n ~~p~~ q r s t ~~v~~ w x y z
b d f g h

“j” see page 5

The letter symbol, j, and the sound for which it stands presents a peculiar problem. Let’s skip over this letter and return to it after completing the alphabet. See page 5.

[k]

The letter, k, stands for the sound [k] as in *kite*, *keep* and *kick*. The sound [k] may also be represented by the letter, c, as in *cake*, *cookies* and *cute*.

~~a~~ b ~~d~~ ~~f~~ g h ~~j~~ ~~k~~ l m n ~~p~~ q r s t ~~v~~ w x y z
b d f g h k

[l]

The letter, l, represents the sound [l] in the words *laugh*, *low* and *look*.

[m]

The sound [m], represented by the letter, m, is found in the words *me*, *moon* and *mother*.

[n]

The letter, n, represents the sound [n] as in *nut*, *no* and *nice*.

[p]

The letter, p, represents the sound [p] as in *pig*, *pony* and *pear*.

q = [kw]

The letter, q, represents the blending of two sounds, [k] and [w] as in the words *quiet*, *quick* and *quote*. It has no distinctive sound of its own so we shall cross it out of the alphabet.

~~a~~ b ~~d~~ ~~f~~ g h ~~j~~ ~~k~~ l m n ~~p~~ ~~q~~ r s t ~~v~~ w x y z
b d f g h k l m n p

[r]

The letter, r, stands for the sound [r] as in *red*, *rabbit* and *rope*. Technically, there are many variations of the [r] sound, but we shall pass over them at this time.

[s]

The letter, s, represents the sound [s] found in the words

saw, see and soap. The [s] sound may also be represented by the letter, c, as in cycle, cider and city.

a b c d e f g h i j k l m n o p q r s t u v w x y z
b d f g h k l m n p r s

[t] The sound, [t], is represented by the letter, t, in the words top, tie and tea.

[v] The letter, v, stands for the sound [v] in the words veil, vase and valentine.

[w] The letter, w, stands for the consonant sound [w] in the words we, want and window. As a consonant, it is always used in the initial position of a syllable or word. When used in a final position, as in the word, cow, the w represents a diphthong. A diphthong is two adjacent vowel sounds within the same syllable.

x
 final = [ks]
 initial = [z]
 The letter, x, at the end of a syllable usually represents the blending of the two sounds [k] and [s] as in the words box, sox and flex. When the letter is used at the beginning of a word such as xylophone, it takes the sound of [z]. Since it has no sound of its own, we shall cross this letter off, also.

a b c d e f g h i j k l m n o p q r s t u v w x y z
b d f g h k l m n p r s t v w

“y” see page 5

The letter, y, may represent either a consonant or a vowel sound. It is used as a vowel in the middle or final position of a syllable in such words as gypsy and gymnasium. It represents a consonant sound in the initial position of a syllable as in the word yes. The symbol, y, presents another peculiar problem when used in the initial position as a consonant. We shall skip over this letter for the moment, picking it up on page 5.

[z] The letter, z, represents the sound [z] as in zoo, zebra and zipper.

a b c d e f g h i j k l m n o p q r s t u v w x y z
b d f g h k l m n p r s t v w z

Reviewing the alphabet, we find sixteen letters which represent similar sounds. They are as follows:

- [b] as in bee
- [d] as in do
- [f] as in foot
- [g] as in go
- [h] as in help
- [k] as in kite
- [l] as in love
- [m] as in me
- [n] as in no
- [p] as in pie

[r] as in *red*
[s] as in *so*
[t] as in *to*
[v] as in *vote*
[w] as in *want*
[z] as in *zoo*

You should be aware by now that there are differences between the letters of the English alphabet and the sounds of our spoken language. While we have some letters which are unnecessary such as *c*, *q*, and *x*, we also have some letters which represent several sounds, such as the letter, *t*, in the following words: *tie*, *those* and *affection*.

English spelling does not necessarily indicate pronunciation as English is not a phonetic language. A phonetic language would have one symbol for each sound. In English, however, we have only twenty-three letters to represent forty-four sounds. We do not count *c*, *q*, and *x*, the letters we crossed out, as they are duplicate symbols.

phonetics

Phonetics is the science which investigates vocal sounds and the study of production and perception of speech sounds. The phoneticians have designed an alphabet to provide a consistent and universally understood system of symbols for writing the speech sounds of all languages. This symbolization is called the **International Phonetic Alphabet** or the **IPA**.

*International
Phonetic Alphabet*

Because we do not have a one-to-one relationship between the letters of our alphabet and the sounds for which they stand, the IPA has been adopted as a working tool for speech pathologists.

*IPA: 1 to 1 relationship
symbol to sound*

The International Phonetic Alphabet uses many of the same letter symbols we have just discussed. But, we must remember, that in the IPA system, each of these letters stands for one sound only—those in the words which we noted—and cannot be used for any other sound as can the letters in our English alphabet.

With this in mind, let us review those sixteen sounds once more:

[b] as in *bee*
[d] as in *do*
[f] as in *foot*
[g] as in *go*
[h] as in *help*
[k] as in *kite*
[l] as in *love*
[m] as in *me*
[n] as in *no*
[p] as in *pie*

[r] as in *red*
 [s] as in *so*
 [t] as in *to*
 [v] as in *vote*
 [w] as in *want*
 [z] as in *zoo*

We have nine other consonant symbols in addition to these sixteen.

First, let's return to those two letters of the alphabet which we skipped over because of their peculiar problems, *j* and *y*.

[dʒ] In English, the letter, *j*, represents the sound found in the beginning of the words *jeep*, *jacket* and *juice*. This same sound is also spelled with a *g* in the words *giant*, *gym* and *gypsy*. The IPA symbol for this sound is [dʒ], a combination of two other symbols which acknowledges the elements of the closure of the voiced [d] and the frictional element of the sound [ʒ], as in *garage*. But note that [dʒ] is not a blend of the two sounds, but a single different sound containing the elements of two other sounds.

Now we can add the symbol [dʒ] to our list as follows:

[dʒ] as in *jeep* and *giant*
 [j] The letter symbol, *y*, is not used in the IPA. The sound for which this letter stands in the English alphabet is represented in the IPA by the German letter, *j*, as in the word *jah*, (pronounced "yah" and meaning, "yes").

CAUTION You must be very careful not to confuse the English letter, *j*, pronounced [dʒ], with the phonetic symbol [j] pronounced "y" as in *yes*.

We can add the symbol [j] to our list as follows:

[j] as in *yellow*

digraph In English we sometimes combine two letters to represent one consonant sound. We call this combination a **digraph**.

CAUTION Do not confuse a digraph, which is a pair of English letters representing a single consonant sound, with a consonant blend which is two consonant sounds appearing together in a syllable such as [tr] in *tree*; [sw] in *swing* and [tw] in *twin*.

digraphs
sh *ch* *wh* *th*
 There are four digraphs in English which represent five different sounds. These digraphs are *sh* as in *ship*, *ch* as in *church*, *wh* as in *why*, and *th* as in *thin* (voiceless) and *those* (voiced).

th – *thin* (voiceless)

th – *those* (voiced)

see voicing, page 11

Notice that the *th* in *thin* is considered a different sound from the *th* in *those*. The tongue placement and manner of production are just the same except one uses the voice and the other does not, deriving its sound from the noise of the air friction only.

The digraph *sh* is represented by the symbol [ʃ]. It is an

[ʃ] sh as in shoe

easy symbol to remember if you think of it as an elongated “s”. The [ʃ] and the [s] sounds have many characteristics in common. We shall study them later.

[tʃ] ch as in chair

The IPA symbol for the digraph *ch* is [tʃ]. This is another symbol made by combining two other symbols in recognition of the *elements* of both the closure of the voiceless [t] sound and the frictional element of the [ʃ] sound.

Remember that [tʃ] is a *single* sound and not a blend of two different sounds.

[hw] wh as in why

The digraph *wh* is represented in phonetics as [hw]. It is a voiceless sound found in the words *why*, *where*, *when* and *what*.

[θ] th – thin

The voiceless digraph *th* is represented by the phonetic symbol [θ]. The voiced digraph *th* is represented by the phonetic symbol [ð].

[ð] th – those

We can now add these five digraphs to our list:

[ʃ] as in *show*

[tʃ] as in *church*

[hw] as in *why*

[θ] as in *thin*

[ð] as in *those*

[ŋ] as in *sing*

There are two remaining consonant sounds. The first sound, represented in the IPA as [ŋ], is a combination of the elements of the sounds [n] and [g] as found in the word *sing*. But it is *not* a blend. It is a single and different sound which is somewhere between the [n] and [g]. It is found in such words as *ring*, *tongue*, *donkey* and *bank*.

[ʒ] as in *leisure*

The last sound, represented by the symbol [ʒ], is one of the less frequently used consonants appearing in such words as *treasure*, *television*, *measure*, *division*, *azure*, *garage*, *corsage* and *mirage*. It is usually spelled *g*, *s*, *z*, or *si*. This sound is never found at the beginning of an English word.

9 new symbols

Here is a review of these nine new symbols:

[dʒ] as in *jeep* and *gym*

[j] as in *yes*

[ʃ] as in *shoe*

[tʃ] as in *church*

[hw] as in *why*

[θ] as in *thin*

[ð] as in *those*

[ŋ] as in *sing*

[ʒ] as in *television*

This completes the survey of the twenty-five consonant sounds found in the English language. For a double review, here is a list containing the International Phonetic Alphabet symbol, the most common English spellings and several word examples.

IPA	English Spelling	Examples
[b]	b	<i>ball, Bobby, knob</i>
[d]	d	<i>dog, ladder, ruled</i>
[f]	f, ph, gh	<i>foot, phone, fluffy, cough</i>
[g]	g	<i>gate, wagon, bag</i>
[h]	h	<i>hair, beehive</i>
[k]	k, c, ck	<i>kite, cat, ticket, tack</i>
[l]	l	<i>love, dollar, call</i>
[m]	m	<i>man, mama, ham</i>
[n]	n, pn, gn, kn	<i>nut, banana, can, pneumonia, gnat, knife</i>
[p]	p	<i>pet, puppy, top</i>
[r]	r	<i>red, carrot, car</i>
[s]	s, c, ce, ci, cy	<i>sun, lesson, kiss, cent, scene, city, cyst</i>
[t]	t	<i>tail, letter, rat</i>
[v]	v, f, ph	<i>vase, oven, love, of, Stephen</i>
[w]	w	<i>water, towel</i>
[z]	z, s, x	<i>zoo, scissors, dessert, xylophone</i>
[dʒ]	j, g, dg	<i>jeep, gypsy, sargent, bridge</i>
[tʃ]	ch, tch, ti	<i>chair, question, catch</i>
[ʃ]	sh, s, si, ti, ce	<i>shadow, sugar, mission, election, ocean, hush</i>
[j]	y	<i>year, canyon</i>
[θ]	th	<i>think, bathtub</i>
[ð]	th	<i>them, grandmother</i>
[hw]	wh	<i>whale, why, nowhere</i>
[ʒ]	si, s, z, g	<i>division, measure, azure, mirage</i>
[ŋ]	ng, n	<i>king, pink, tongue, donkey</i>

The above shows only the most common spelling of the sounds. There are more.

16 vowels

It would be impossible to run through the five or six alphabet letters representing the vowels in the same manner as we have just done with the consonants as the sounds and the spellings are so inconsistent. There are approximately sixteen vowel sounds commonly used in English. We shall list these with their phonetic symbols and several words to help clarify the pronunciations.

- [i] as in *he, see, me, meat, thesis, ski*
- [ɪ] as in *it, pin, pity, skip, jeer, fear, myth, busy, been*
- [e] as in *pay, weigh, they, make, hail*
- [ɛ] as in *bed, bread, wet, bell, pen, dress*
- [æ] as in *hat, bag, map, wrap*
- [a] as in *ask, path, dance* (not used by the average American speaker; [æ] is substituted for this sound.
- [u] as in *few, food, rule, tool, true, group, fruit, shoe, two, tooth*
- [ʊ] as in *put, wood, could, book, push*

- [o] as in *hope, coat, cope, though, rope*
- [ɔ] as in *song, bought, shawl, straw, jaw, often, ball, haul*
- [ɒ] as in *John*. This sound is half-way between [ɑ] “ah” and [ɔ] “jaw” and is not commonly used. Most American speakers use [ɔ] for this sound.
- [ɑ] as in *father, party, heart, not*
- [ɜ] as in *bird, turn, term, search, word, journey, colonel, herb, further*
- [ɔ] as in *color, sugar, father, martyr*
- [ə] as in *along, circus, uniform, pigeon*
- [ʌ] as in *son, lunch, rough, flood, does, cup, shut, puppy, come, luck*

diphthong

When two vowels occur side by side in *one syllable*, they are pronounced as one vowel, starting from the position of the first vowel and gliding smoothly and continuously into the position of the second vowel. This vowel combination is referred to as a **diphthong**.

CAUTION

Do not confuse a diphthong with two vowels appearing side by side in different syllables. In that case, each vowel is pronounced distinctly with no blending, i.e., *li-on, do-ing, Mi-ami, li-ar, mi-opic*. A diphthong is two adjacent vowels in the **same** syllable.

While there are over thirty diphthong combinations in English, there are three so common that they are usually listed separately. These three are:

- [aɪ] as in *I or eye, sign, sight, sigh, die*
- [aʊ] as in *cow, sour, dowry, flour, down*
- [ɔɪ] as in *boy, oil, soil, toilet, doily*

Remember, when you pronounce a diphthong, you start with the position of the first vowel and glide smoothly and continuously into the position of the second vowel. Usually the major stress is on the first vowel.

IPA-sounds alphabet-spelling

While speech pathologists find it more convenient to use the International Phonetic Alphabet for its clarity, remember that the pupils we teach must deal with the language through our English alphabet. Help them to differentiate between sounds and spelling and to recognize the variant spellings of the sounds.

CAUTION

Be sure of your spelling! Do not misspell words in your lesson material or on the blackboard. Use the dictionary. Your carelessness may impose an added burden on your speech handicapped student.

phonics

One more bit of information might help you when working in the public schools. Speech pathologists talk of *phonetics*, while elementary school teachers talk of *phonics*.

Phonics is a method of teaching pronunciation and oral reading by first teaching the sounds for which the English letters stand. The procedure of associating these spoken-heard units

(vocal-auditory) with the seen-written symbols (visual-graphic) is called phonics.

phonetics

Phonetics is the science which investigates vocal sounds and studies the production and perception of speech sounds including individual and group variations as to their use in speech. The phoneticians have symbolized all spoken sounds and created the International Phonetic Alphabet or IPA.

In other words, phonics deals with the relationship of the spoken English sounds to the written English alphabet. Phonetics deals with the relationship of all speech sounds from any language to the International Phonetic Alphabet.

$$\text{phonics} = \frac{\text{English sounds}}{\text{English alphabet}}$$

$$\text{phonetics} = \frac{\text{all sounds}}{\text{IPA}}$$

Chapter 2

CLASSIFICATION OF SOUNDS

We group sounds to show relationships and to identify the characteristics of each sound. There are several ways to do this. To begin with, let's group the consonant sounds according to how the sounds are made.

sound duration
continuants

The consonants may be divided into two groups according to the *duration of the sound*. Most consonants are called **continuants**, because they may be prolonged indefinitely on one breath without stopping. The speech organs remain relatively fixed during the period of production. There are seventeen continuant sounds.

[hw] - why [θ] - thin
[ð] - those [ʃ] - shoe
[ʒ] - leisure [ŋ] - sing
[j] - yes

Say each sound aloud and hang on to it for a count of three before saying the next sound. This will help you to understand the concept of continuance.

Continuants:

hw, w, f, v, θ, ð, s, z, ʃ, ʒ, m, n, ŋ, l, r, j, h

stop-plosives
plosives
stops
explosives

The remaining consonants have a very brief duration. They are usually termed **stop-plosives** because the sounds are made by completely stopping the air stream for a moment, building up pressure, and then suddenly releasing it. Stop-plosive sounds are also known as **plosives**, **stops**, and **explosives**.

Say each of the consonant sounds below and decide which ones fit the description of a stop-plosive. Draw a circle around them. Use a pencil so you can easily correct any errors.

[dʒ] - jeep
[tʃ] - chair

b d f g h dʒ k l m n p r s t

v w j z ʃ tʃ θ ð hw ʒ ŋ

Test your choices by putting the back of your hand in front of your mouth and say aloud each sound you have circled. Can you feel the sudden explosion of your breath?

You should have circled eight sounds: [b], [d], [g], [dʒ], [k], [p], [t], and [tʃ].

aspirates

Three of these stop-plosives, [p-t-k], are also called **aspirates** because they are exploded with a strong puff of air.

affricatives

Two of these stop-plosives, [tʃ] and [dʒ], are sometimes referred to as **affricatives** because in addition to the stopped breath, there is a friction quality similar to the fricative sounds.

[tʃ] - chair

[dʒ] - jeep

We have now divided the twenty-five consonant sounds into two groups, *stop-plosives* and *continuants* according to the *duration of the sounds*. The stop-plosives are short and sharp. These sounds cannot be prolonged. The continuants may be prolonged indefinitely.

STOP-PLOSIVES: p, b, t, d, k, g, tʃ, dʒ

CONTINUANTS: hw, w, f, v, θ, ð, s, z, ʃ, ʒ, m, n, ŋ, l, r, j, h

voicing

We may also divide the consonant sounds according to *voicing*. While we speak of using our voice for speech, we actually have ten speech sounds which do not use the voice at all. These sounds are produced by high frequency noises made by the breath being forced through various openings. The [s] is an example of a voiceless speech sound. The hissing noise is made by the air being forced through the small opening between the teeth. Sounds made without the voice are known as **breath sounds, voiceless sounds, or surd sounds**.

{ *breath*
voiceless
surd

By definition, a breath sound is one which depends upon high frequency noises for its characteristics without using the vocal cords.

Say each consonant sound aloud and see if you can pick out the breath sounds. Draw a circle around your choices. If you say the sounds outloud, you should have no difficulty.

b d f g h l m n p r s t v w z hw

θ ð tʃ dʒ ʃ ʒ j ŋ

You should have circled ten sounds: [f], [h], [k], [p], [s], [t], [ʃ], [tʃ], [θ], and [hw]. Check your answers. Go over the correct sounds with a blue pencil or pen.

{ *voiced sound*
sonant

A **voiced** sound, also known as a **sonant sound** is produced with the vibrations of the vocal cords. These vibrations can be felt by placing the hand on the larynx or voice box. If you say [s], then turn on your voice, you will hear the voiced [z] sound. The only difference between the sound [s] and the sound [z] is the absence or presence of the voice. In all other respects, the two sounds are made alike. We call these voiceless-voiced sound pairs **cognates**.

cognates

All but one of the ten breath sounds have a voiced cognate. They are listed below:

Breath	Voiced
[p]	[b]
[hw]	[w]
[f]	[v]
[θ]	[ð]
[t]	[d]
[s]	[z]
[tʃ]	[dʒ]
[ʃ]	[ʒ]
[k]	[g]

Say each pair of sounds aloud, paying particular attention to the absence or presence of the voice. If you have difficulty

[f-v] cognates distinguishing between voiceless and voiced consonants, press your hands firmly over both ears and say the cognates [f-v]. You should feel a vibrating sound when saying the [v]. All you hear when saying the voiceless [f] is the sound of breath escaping through your mouth.

Another method of distinguishing the absence or presence of the voice is to place your fingers lightly on the larynx or voicebox while pronouncing the [f] and [v]. You will not feel anything while saying the voiceless [f]. You will feel the vibrations of the vocal cords when saying the voiced [v] sound.

nasal sound

breath

voiced

nasal

A **nasal sound** is a voiced consonant which directs the air through the nose instead of the mouth. Technically, a nasal sound is a subheading under the voiced sounds. However, in presenting the sounds to our pupils, we usually ignore this technicality and classify the sounds according to *breath*, *voiced* or *nasal*.

The [m] is an example of a voiced nasal sound. With the lips together, the voiced sound is sent through the nasal cavity. Of the fifteen voiced sounds, three are nasal. We said that one of these is the [m]. Can you figure out the other two? Take a pencil and circle the three nasal sounds.

b d f g h k l m n p r s t
v w z hw θ ð tʃ dʒ ʃ ʒ j ŋ

Now take a red pencil and circle the remaining voiced sounds. Better say each one aloud to make sure they are voiced. Place your fingers lightly on your voice box and you can feel the vibrations as the sound is produced. Check the remaining sounds to make sure they are voiceless, then circle them with a blue pencil.

If you have marked them correctly, your consonant list should look like this:

(b) (d) (f) (g) (h) (k) (l) (m) (n) (p) (r) (s) (t) (v)
(w) (z) (hw) (θ) (ð) (tʃ) (dʒ) (ʃ) (ʒ) (j) (ŋ)

cognate confusion

The three colors of blue, red and brown were chosen because teachers of the deaf have long used this color code as an aid in teaching their students to make the distinctions between voiceless, voiced, and nasal sounds. This color code is an excellent tool for all students having problems with *cognate confusion*, that is, the substituting of a voiced consonant for its voiceless cognate or vice-versa.

The code is as follows:

color code

BLUE voiceless sounds
RED voiced sounds
BROWN ... nasal sounds