

The Sequence of Speech-Sound Acquisition in THE LETTER PEOPLE® Programs

We are often asked to explain the sequence of letter introduction in the Letter People programs (see Figure 1). Although no one best sequence for teaching sound-letter relationships has yet been established, the Letter People programs follow a sequence that is grounded in what experts know about the order in which children typically acquire speech sounds. By following this sequence, teachers have seen tremendous results. Children's learning is facilitated by having them explore, play with, and manipulate sounds that are easiest for them to hear, articulate, and imitate.

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Figure 2 summarizes the findings of several decades of research into the order of speech-sound acquisition in children (Olmstead 1971; Owens 1996; Sander 1972; Templin 1957). The bar begins at the age at which 50 percent of normally developing, English-speaking children can produce a speech sound correctly. It ends at the age at which 90 percent of normally developing children can produce the sound correctly.

Information from speech-sound acquisition research serves as the foundation for the sequence in which sounds and letters are introduced in the Letter People programs.

For example, in *Let's Begin with the Letter People*®, the Pre-K program, the six units in the first theme introduce the letters *n*, *w*, *p*, *h*, *m*, and *a*—representing nasals, stops, glides, and a vowel. (See Figure 1 for the complete Pre-K order of introduction.) In addition, this sequence of introduction takes into consideration information about how best to present children with sounds and letters. We know, for example, that it is wise (and less confusing to children) to separate the introduction of letters with sounds that are auditorally similar, such as /m/ and /n/ or /p/ and /b/, or that are visually similar, such as *b* and *d* or *p* and *g*.

The sequence of introduction used in *Land of the Letter People*®, the kindergarten program (see Figure 1), reflects what the chart in Figure 2 indicates: By age five, most normally developing children can produce correctly most of the sounds of the letters of the alphabet. At the kindergarten level, therefore, additional concerns in developing a sequence of introduction are (1) that children first work with consonants (for example, *m*, *f*, and *n*) with sounds that can be pronounced in isolation with the least distortion and (2) that the earliest sound-letter relationships introduced (for example, *f*, *t*, *m*, *n*, *h*, *a*, and *p*) should be those that are high-utility in making a large number of words—that is, they enable children to begin reading words as soon as possible. Many speech sounds, especially vowels, are spelled with more than one alphabet letter (*aw*, *oi*, *ou*, *er*, *th*, *sh*, *ch*, *ng*, and so forth). These sounds can be used for phonemic awareness in kindergarten, but children will not learn to spell them until first grade.

Figure 1: Sequence of letter introduction in the Letter People programs

Let's Begin with the Letter People (Pre-K)	Land of the Letter People (Kindergarten)
n	m
w	t
p	f
h	n
m	h
a	a
b	p
k	z
d	b
f	i
o	s
c	d
e	u
y	v
g	l
ı	w
s	o
r	r
z	g
i	e
q	j
v	c
l	k
u	y
j	q
x	x

Children’s speech-sound acquisition proceeds gradually and is contingent on neurological, physiological, and gross motor maturity and exposure to spoken language.

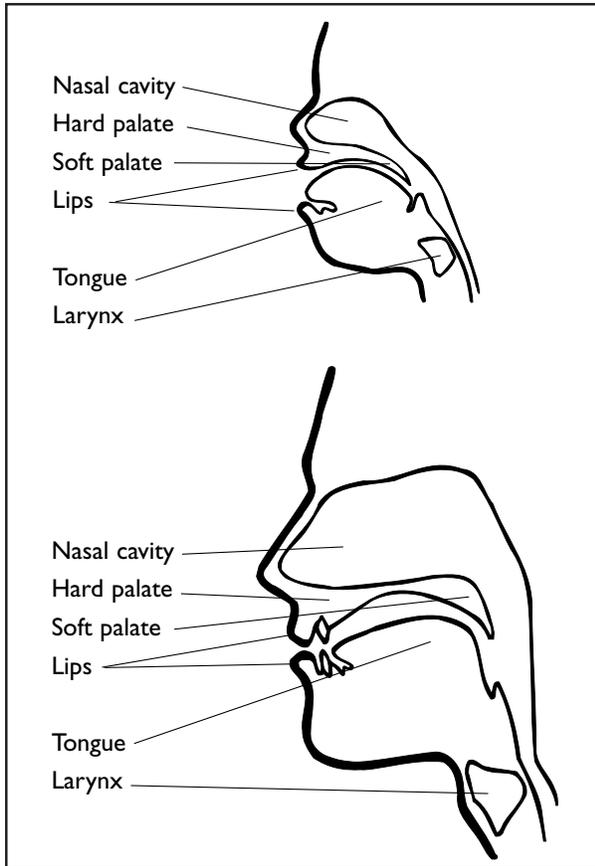
Indeed, the very ability to speak is tied directly to changes in the vocal tract anatomy (Baron 1992). As Figure 3 shows, the vocal tract anatomy of infants is quite different from that of adults, not only in size but in the position of the various components, or articulators, that allow humans to produce speech.

The changes in positioning of the larynx (vocal cords) and the pharynx (the area from the nasal cavity to the larynx) as children mature are of particular importance. The original positions, which allow infants to breathe through their noses and swallow at the same time, make it impossible for them to articulate a range of sounds (Baron 1992).

Figure 2: Order of speech-sound acquisition in children

Sound	Age: 2	2.5	3	3.5	4	4.5	5	5.5	6	7	8
/n/											
/m/											
/p/											
/h/											
/w/											
/b/											
/k/											
/g/											
/d/											
/t/											
/ng/											
/f/											
/y/											
/r/											
/l/											
/s/											
/z/											
/ch/											
/sh/											
/j/											
/v/											
/th/											
/th/											
/zh/											
/kw/											
/ks/											

Figure 3: Comparison of vocal tract anatomy of infant and adult



As Figure 4 indicates, vowels are simple sounds that are produced by position of the tongue and lips. Consonants, however, are more complicated to produce. The ways of producing consonants, or manners of articulation, are called *stops*, *nasals*, *fricatives*, *affricates*, *glides*, and *liquids* (MacLean and MacLean 1999). Figure 5 shows the ways consonants are produced.

It is not surprising that the earliest sounds children produce are those that are the simplest for them to articulate, given the anatomy of their vocal tract. These sounds are the vowels, nasals, and stops (Cairns 1996).

Children learn to speak by hearing and imitating what they hear. It stands to reason, therefore, that children will first attempt to make the speech sounds they hear most often in the speech of their parents, older siblings, and other adults. Thus, children acquire the common /s/ before the less common /zh/ (Baron 1992).

Figure 4: American English vowels organized by change in mouth position

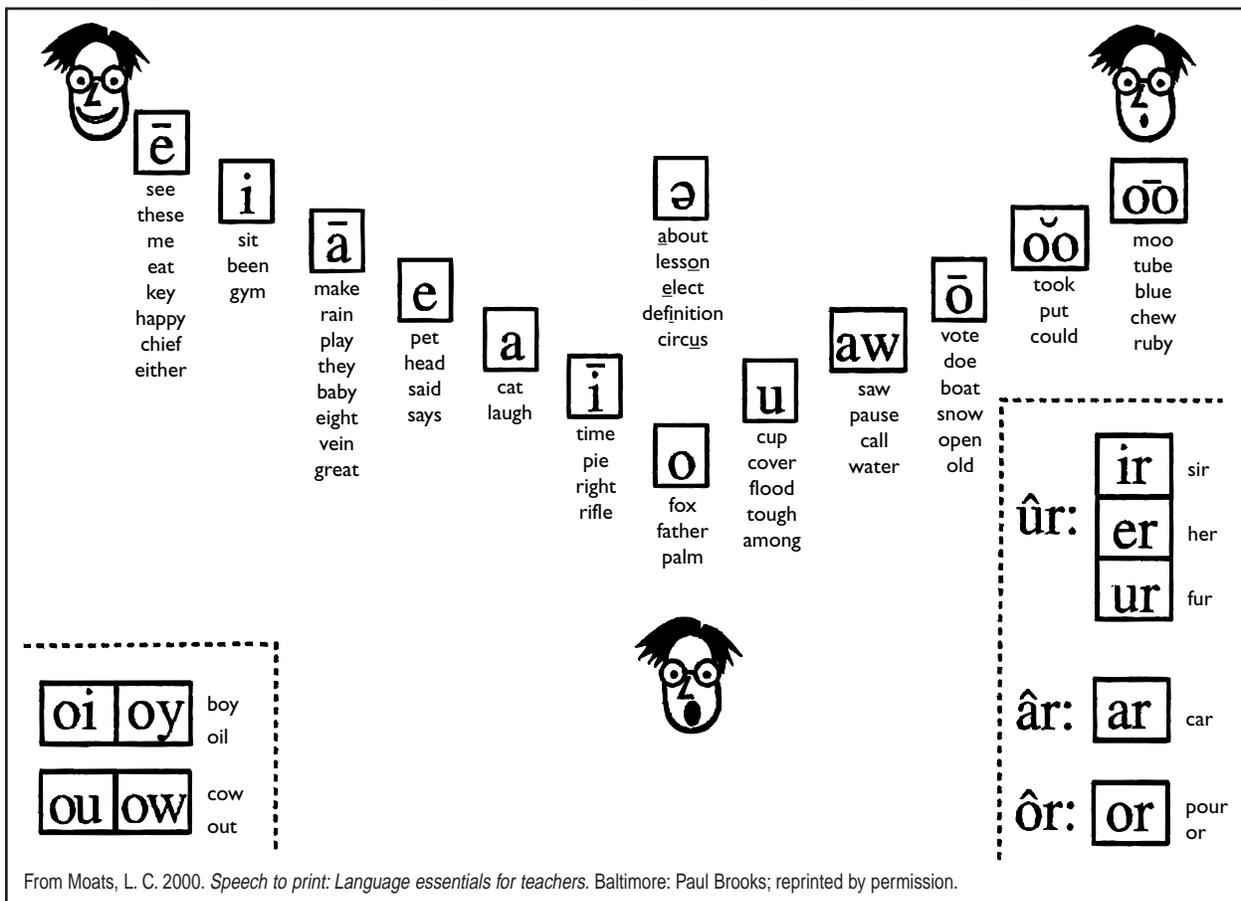


Figure 5: American English consonants (phonic symbols)

	Lips	Lips/ teeth	Tongue between teeth	Tongue behind teeth	Roof of mouth	Back of mouth	Throat
Stop a consonant sound made by completely blocking the air passage and then unblocking it	/p/ /b/			/t/ /d/		/k/ /g/	
Nasal a consonant sound made by passing air through the nose	/m/			/n/		/ŋg/	
Fricative a consonant sound made by forcing breath through a constricted passage		/f/ /v/	/θ/ /ð/	/s/ /z/	/ʃ/ /ʒ/		
Affricate a consonant sound made by completely stopping the breath and releasing it through a constricted passage					/tʃ/ /dʒ/		
Glide a consonant sound that is coarticulated with the vowel that immediately follows it					/y/	/w/ /w/	/h/
Liquid a consonant sound made without friction that is capable of being continuously sounded like a vowel				/l/ /r/			
The consonant pairs in the boxes differ only in voicing: The voiceless sound is on top, and the voiced sound is below in the same box.							
From Moats, L. C. 1995. <i>Spelling, development, disability, and instruction</i> , p. 12. Timonium, MD: York Press; reprinted by permission.							

Reviewing a number of studies that have attempted to establish an order of sound acquisition by young children, Owens (1996) concluded the following:

- Among the consonant sounds, children generally first acquire the nasals, followed by the stops, glides and liquids, fricatives and affricates.
- Children first acquire sounds in the initial position in words.
- In general, children do not acquire consonant clusters and blends until age seven or eight.
- There are great individual differences among children, and the age of acquisition for some sounds may vary as much as three years.

Speech-sound acquisition research supports the sequence of letter introduction in the Letter People programs.

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