

# Sign Sounds™

SEE, FEEL & MAKE SPEECH SOUNDS



By JILL HICKS

[www.downsyndromejunction.com](http://www.downsyndromejunction.com)

Sign Sounds™ Handbook

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Sign Sounds™ was created by speech-language pathologist,  
Jill Hicks. For ordering information, please visit

[www.downsyndromejunction.com](http://www.downsyndromejunction.com)

# Foreword

Welcome to Sign Sounds™. I sincerely hope your child or student will have great success learning about sounds with the help of the Sign Sounds hand cues. What began as a tool to help one child has evolved into a number of materials to help many children and I am thrilled to have been given the privilege of helping children learn, experience the joy of success, and feel good about themselves.

When I received my training at McGill's School of Communication Sciences and Disorders as a speech-language pathologist back in the 1980s I did not imagine the way I would be challenged to use my professional skills to help one of my own children. But in 1998 I was blessed with a daughter with Down syndrome. As she grew from an infant to a toddler, it became obvious to me that I needed a way to help her learn about speech sounds, not only so she could learn to speak more clearly, but so that she would have a basis for reading and spelling.

I wanted a system that clearly distinguished the phonemes (speech sounds) one from another, that was multisensory, and that was simple and easy to use. Although I was aware of other programs none of them had all the key features I felt were necessary. That is when I developed the individual hand movements that mimic the mouth movements for the phonemes. It was more than a bunch of arbitrary movements, it was a *system* with rules that mirror the rules for how speech sounds are made. In this handbook you will learn about the different qualities of speech sounds: how some explode, how some are made with the vocal cords moving, how some have air coming out the nose, etc. I endeavoured to make the hand cues highlight these important properties of each sound and work together as a whole system of hand cues.

Sign Sounds™ has been used not only by me but by other speech-language pathologists, educators, and parents for many years now and has given numerous children the gift of understanding—how to tell phonemes apart, how to make them, and how to hear individual sounds in words and match them with letters, opening the floodgate to reading and spelling.

In this handbook you will learn how to use the Sign Sounds hand cues to develop these skills with your child or students. Part One - *The System* explains what Sign Sounds™ is and how to make the hand cues. Part Two - *Research to Practice* is divided into chapters that examine various communication skills: phonological awareness, reading, spelling, language and speech. Each skill is defined, and research bases are explored to show why Sign Sounds™ works. At the end of each chapter there are practical activities using Sign Sounds to develop skills.

Due to its simplicity, Sign Sounds™ is very versatile. It has proven its effectiveness helping children with a variety of learning challenges such as those with childhood verbal apraxia, hearing impairment, learning disabilities, Down syndrome, autism, and global developmental delay, as well as those who are late talkers. But one of the beauties of Sign Sounds is that it's also a great tool for typically developing children, helping them make sense of phonemes for speech, language, and literacy. So teachers (English and ESL) can use Sign Sounds for all the children in their class and when students with special needs get extra help they will be using the same system the rest of the class is using. This is true inclusion, when children with varying learning styles and abilities can all learn together!

And when parents embrace the Sign Sounds system, they can reinforce important speech and language skills at home, whether it's saying a sound, matching sounds and hand cues with letters, or spelling words by hearing the sounds in the words. In each of these situations, using the hand cues becomes a natural way to highlight key sounds, to make learning accessible, and success a reality.

That is my hope for you and your child or students—wishing you success as you learn the Sign Sounds™ way!

Jill Hicks

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**Part 1:**

**Sign Sounds™:**

**The System**



# Chapter 1

## What is Sign Sounds™

Sign Sounds™ is a *system* of hand cues that represent speech sounds. The hand cues are tied directly to how and where the speech sounds (phonemes) are made. The hand cues manipulate the articulators by touching the lips, cheek, nose, neck, or jaw. Sign Sounds hand cues add extra visual and tactile-kinesthetic (touch) information to help distinguish individual phonemes. They can be used to enhance communication, stimulate articulation, refine auditory processing skills, and develop phonological awareness, phonics and spelling. The Sign Sounds™ system can be used with pre-school and school-aged children, adults, ESL students, and people with a variety of learning challenges. In this section I will introduce the Sign Sounds™ system of hand cues and explain how it works.

### Hand Cues Represent Sounds

Sign Sounds™ hand cues mimic the mouth movements for individual speech sounds. Each hand cue is paired with an individual phoneme, or speech sound. The key here is *sounds*. Hand cues represent sounds, not letter names. In section two we will see why learning about sounds is so important. Each hand cue is *distinct* (different from every other hand cue).

### Hand Cues Are Direct Representations of Sounds

Each Sign Sounds™ hand cue is a direct representation of a speech sound. The hand cues are based on how and where the phoneme is made in the mouth, and whether or not the sound is voiced.

### Sign Sounds™ is a System

Speech sound production can be classified into patterns or rules about how different sounds are made. The Sign Sounds hand cues follow these speech sound rules and therefore fit together as a whole system of hand cues.

### Sign Sounds™ Has No Semantic Load

Since Sign Sounds™ hand cues are direct representations of sounds they do not require higher cognitive associations or explanations. Sign Sounds hand cues are not arbitrary (for example based on movements in the air), nor are they based on a semantic association (such as /k/ is for ‘castanets’), nor do they require higher level processing such as interpreting diagrams or remembering word phrases to classify the sound.

### Hand Cues Are Receptive and Expressive

Sign Sounds™ hand cues are used by the speaker to highlight sounds — in this way the hand cues are used expressively. When used expressively, the hand cues add tactile-kinesthetic information to prompt correct articulation and help the speaker clarify the message.

Hand cues are also seen by the listener to interpret what sound the speaker is saying — in this way the hand cues are used receptively. When used receptively, the hand cues add important visual information to help the listener decipher what sounds are being said.

### Sign Sounds™ Is Simple

The beauty of Sign Sounds™ is its simplicity. There are five basic rules:

1. Vowels use the whole hand.
2. Voiceless consonants use one finger.
3. Voiced consonants use two fingers.
4. Plosive consonants burst open.
5. Continuant consonants and vowels don't explode.

It is this simplicity that makes Sign Sounds™ accessible to such a wide variety of learners and useful for teaching such a variety of complimentary skills.

## **Sign Sounds™ Materials**

### **Sign Sounds™ DVD**

An interactive Sign Sounds™ DVD shows how each hand cue is made; by watching the short video clips for each phoneme, it is easy to learn how to make the hand cues.

### **Sign Sounds™ Photo Cards**

Included with the Sign Sounds™ program are colour photo cards showing the hand cue position for each phoneme. A letter (or letter combination) is also printed on the front of the photo card. The letter on the front of the photo card is distinct (not duplicated on the front of any other photo card). The letter is easily recognizable as representing the sound and should be the first letter taught for that sound.

On the back of each photo card is information regarding spelling. The international phonetic alphabet symbol will be helpful to speech-language pathologists. The main spelling for the sound is listed as well as alternate spellings for the sound given in sample words. There is also a description of how to make the hand cue movements.

### **Font**

It should be noted that the font used throughout Sign Sounds, and all Down Syndrome Junction™ materials is the Sassoon Primary Infant font. This font has been chosen because:

- it is the easiest font for young children to read
- it differentiates visually confusing letters such as b and d, p and q
- the tag ends allow an easier transition from printing to cursive writing

## **Speech Sound Primer**

There are a few basics about phonemes that are essential knowledge when working with speech sounds. These include understanding voicing, place and manner of articulation, and how some sounds combine to form a compound sound

Voicing

We speak on the air we breathe out. Air comes up from the lungs, through the trachea and out the mouth and/or nose. Outgoing air has to pass through the larynx (voice box) that contains the vocal cords. When the vocal cords are in an open position and allow unobstructed passage of the airflow, the resultant sound is *voiceless* (or unvoiced). When we turn our voice on, the vocal cords vibrate rapidly and create a sound source. Phonemes that are produced with the vocal cords vibrating are called *voiced* sounds.

There are pairs of phonemes that differ only in voicing — everything else about how the sound is produced is exactly the same. Below is a list of voiceless-voiced pairs:

Voiceless Sound	Voiced Sound
p	b
t	d
k	g
f	v
s	z
sh	ge
ch	j
th (voiceless)	th (voiced)

Notice that all the voiceless sounds are consonants.  
Vowels and diphthongs are always voiced.

### Voicing (continued)

Sign Sounds™ hand cues show whether a sound is voiced or voiceless. Voiceless consonants use only one finger (and sometimes the thumb) whereas voiced consonants always use two fingers (and sometimes the thumb). If you see a hand cue with just one finger you know it is a voiceless consonant.

### Place of Articulation

Place of articulation refers to where in the mouth a sound is made. Some sounds are made with the lips, others with the tongue close to the front of the mouth, others with the tongue close to the back of the mouth. Sign Sounds™ hand cues show where sounds are made. For example, since /p/ is made with the lips, the hand cue is made by putting the index finger and thumb above and below the lips. /k/ is made with the back of the tongue so the hand cue touches under the chin close to the neck to raise the back of the tongue.

### Manner of Articulation

Some consonant sounds are called stop or plosive consonants. Plosive consonants begin with a complete closure (stop) and then the articulators burst open (explode). Sign Sounds™ hand cues identify plosive consonants by touching the articulators which are closed, and then the hand bursts open and away to show the sound is a plosive consonant. Vowels and continuant consonants can be held so the hand cues do not explode for these sounds.

### Compound Sounds

Just as compound words are made by joining two smaller words into one new word, some sounds are made by joining two sounds together. The compound sound is then thought of as one sound.

### Compound Consonants

There are two true compound consonants: /ch/ /j/.  
/ch/ is made by joining the consonants /t/ and /sh/. The Sign

- Sounds™ hand cue shows the compound sound by sliding the /t/ and /sh/ hand cues together.
- /j/ is made by combining the sounds /d/ and /ge/. The Sign Sounds™ hand cue shows the compound sound by sliding the /d/ and /ge/ hand cues together.

There are two other consonants we conventionally treat as compound consonants represented by the letters ‘x’ and ‘qu’.

- /ks/ is the sound made by the letter ‘x’. The Sign Sounds™ hand cue shows the compound sound by sliding the /k/ and /s/ hand cues together.
- /kw/ is the sound made by the letters ‘qu’. (It makes sense to teach ‘qu’ together since in English ‘q’ is always followed by ‘u’.) The Sign Sounds™ hand cue shows the compound sound by sliding the /k/ and /w/ hand cues together.

### Compound Vowels = Diphthongs

There are a number of combined vowels we consider as one sound and which are often called diphthongs. For each compound vowel, Sign Sounds™ hand cues show the first vowel sliding into the second vowel.

- ay is made by combining /e/ and /ee/
- igh is made by combining /o/ and /ee/
- oy is made by combining /oe/ and /ee/
- ow is made by combining /a/ and /ew/
- ue is made by combining /y/ and /ew/
- ar is made by combining /o/ and /er/
- or is made by combining /oe/ and /er/
- air is made by combining /e/ and /er/
- ear is made by combining /ee/ and /er/

## Speech Sound Development

### Vowels and Diphthongs

Simple vowels usually develop first. Short vowels are simple vowels that are easy to say and the easiest vowels to spell because there is one consistent way to spell each short vowel. So it makes sense to teach short vowels first. Compound vowels should not be taught until both simple vowels of the compound are mastered.

### Simple short vowels

a (cat)    e (end)    i (in)    o (off)    u (up)

### Other Simple vowels

ee (see)    oe (toe)    oo (book)    ew (new)    er (her)

### Compound vowels (Diphthongs)

ay (say)    igh (sigh)    ue (cue)

oy (boy)    ow (cow)

ar (car)    or (for)    air (air)    ear (ear)

Consonants

Some consonants are easier to make than others. There is a general pattern of acquisition of consonant speech sounds. The list below shows in line one the first consonants that are typically learned. The list progresses according to typical speech sound acquisition. It makes sense therefore to teach earlier sounds before later sounds.

m p w h

n b d g k

y f t ng l

r s sh ch qu x

v z ge j th (voiced) th (voiceless)

## Study Questions Chapter 1

1. What do Sign Sounds™ hand cues represent? \_\_\_\_\_
  
2. Sign Sounds is a system because it follows  
\_\_\_\_\_
  
3. Sign Sounds hand cues are used receptively when the \_\_\_\_\_ watches the hand cues;  
  
and expressively when the \_\_\_\_\_ uses the hand cues.
  
4. When the vocal cords are vibrating the sound is called a \_\_\_\_\_ sound.  
  
When the vocal cords are open the sound is called a \_\_\_\_\_ sound.
  
5. Stop consonants happen when the articulators \_\_\_\_\_  
  
How are continuant sounds are made? \_\_\_\_\_
  
6. What is a compound sound? \_\_\_\_\_  
  
Give an example of a compound consonant \_\_\_\_\_  
  
Give an example of a compound vowel \_\_\_\_\_
  
7. Why are Sign Sounds™ accessible to such a wide variety of learners?  
  
\_\_\_\_\_
  
8. List the five basic rules of the Sign Sounds™ system  
  
\_\_\_\_\_  
  
\_\_\_\_\_  
  
\_\_\_\_\_  
  
\_\_\_\_\_

## Notes

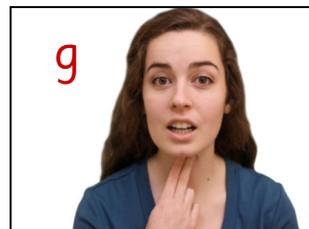
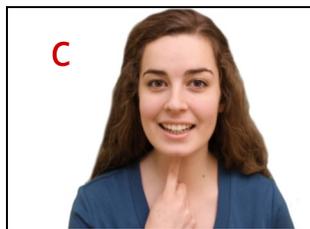


# Chapter 2

## Sign Sounds™ Hand Cues

Sign Sounds hand cues are shown as video clips on the DVD and as visual images on the (6 cm x 10 cm) photo cards with a written explanation given on the back of each photo card. Chapter 2 is a reference library showing miniature samples of the photo cards.

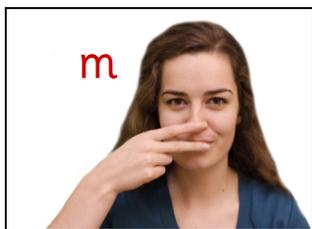
### Plosive Consonants



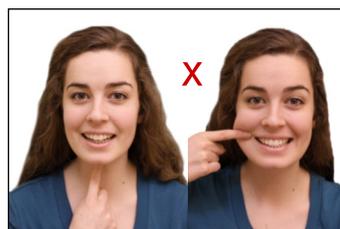
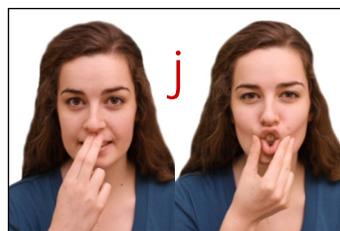
This is a quick visual reference to the Sign Sounds™ hand cues. Please see the Sign Sounds™ DVD and/or photo cards for details regarding how to make each hand cue.

## Continuant Consonants





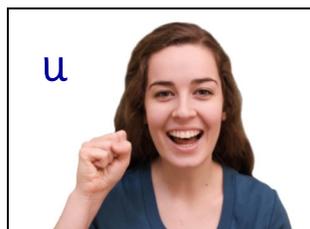
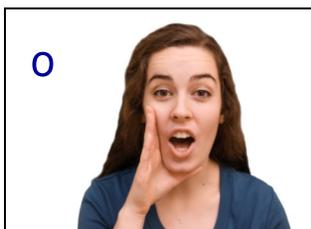
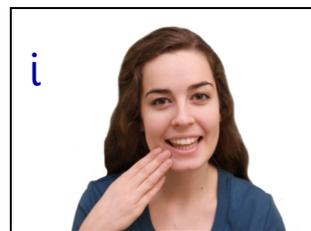
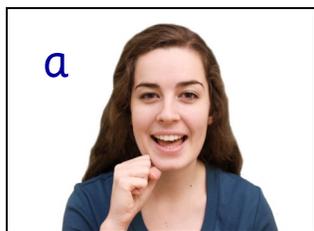
### Compound Consonants



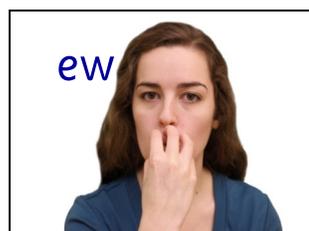
<p>International Phonetic Alphabet</p> <p>ʒ</p> <p>Hand in a fist.</p> <p>Middle knuckles push up under the chin close to the neck.</p> <p><small>www.downsyndromejunction.com Copyright 2016 Jill Hicks — Reproduction Prohibited</small></p>	<p>Sounds Like Spelling</p> <p>er her girl fur word early lizard</p>
--	--

This is an example of the back of a Sign Sounds Hand Cue Photo Card. The main spelling is shown under “Sounds Like” and is the spelling shown on the front of the card. Examples of the letter choices to spell the sound are shown under “Spelling”. The International Phonetic Alphabet is a set of symbols used by speech-language pathologists to identify individual phonemes.

## Simple Short Vowels

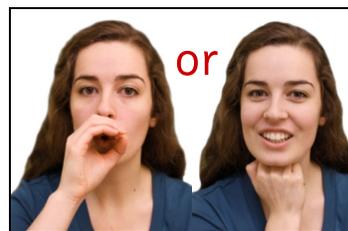


## Other Simple Vowels



This is a quick visual reference to the Sign Sounds™ hand cues. Please see the Sign Sounds™ DVD and/or photo cards for details regarding how to make each hand cue.

## Compound Vowels (Diphthongs)



This is a quick visual reference to the Sign Sounds™ hand cues. Please see the Sign Sounds™ DVD and/or Sign Sounds for Reading & Spelling™ CD to see the movement for each hand cue.

## Study Questions Chapter 2

1. Where can you watch the hand movements for the Sign Sounds hand cues?

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2. What is on the back of each hand cue photo card?

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3. Although the Sign Sounds hand cue stays the same, a phoneme (speech sound) can often be spelled several different ways. Give an example of at least 3 ways to spell a single sound.

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## Notes

# **Part 2:**

## **Sign Sounds™:**

### **Research to Practice**

## Communication

Communication exemplifies human experience. We share thoughts, ideas, wants, needs, feelings. We request, comment, explain, deny, praise, defend and encourage. This extraordinary ability to communicate both variety and subtlety of messages is partly what makes us human. Typically, we use our bodies and faces but primarily our voices and articulators to communicate. We communicate by sending and receiving speech sounds which are grouped together in specific units we call *words*. These conventional sound groupings are associated with specific meaning. This is how we can use strings of sounds to communicate precise thoughts.

Language is a conventional system of symbols for communication. There are three parts to language — content, form and use. The content is the meaning of the message. The form is the vehicle we use to transmit the message. Use, also called pragmatics, is how we use language to communicate. Speaking is so commonplace and so easy that we use it without acknowledging its complexity and mystery. But sometimes we are forced to take a closer look at language and the speech sounds we use to communicate— when we can't understand what someone else is trying to say, when we try to learn a different language, when hearing is affected, or when a child has difficulty learning to speak, read or spell.

Ordinarily we don't think much about the sounds we make. However, speech sounds are an extremely important element in our communication success not only for spoken language but also for written language. In this section we will look at the importance of phonemes in the areas of phonological awareness, phonics, spelling, language and articulation. We will see how Sign Sounds™ can be used successfully to develop skills in these areas. Each section will include practical activities and ideas for using Sign Sounds™ hand cues with children of varying ages and with varying challenges.

“What most distinguishes humans from other creatures is our ability to create and manipulate a wide variety of symbolic representations. This capacity enables us to transmit information from one generation to another, making culture possible, and to learn vast amounts without having direct experience. Because of the fundamental role of symbolization in almost everything we do, perhaps no aspect of human development is more important than becoming symbol-minded.”

(DeLoache, 2005, p. 73)



# Chapter 3

## Phonological Awareness

### Phonemes, Phonological Awareness, Phonemic Awareness, Phonics

When we communicate through spoken language we use words made up of speech sounds, or phonemes. **Phonemes** “are the smallest segments of sound that can be distinguished by their contrast within words” (Ladefoged, 1975, p. 23). So /m/ is a phoneme. So is /a/. So is /th/. When we realize words are made up of separate sounds, we are doing more than communicating; we have entered into the realm of phonological awareness.

**Phonological awareness** is the knowledge that words are made up of smaller parts, and the ability to manipulate those parts. Gail Gillon (2004, p. 11) states:

*“Phonological awareness refers to the understanding that spoken words can be broken down to smaller parts. Phonological awareness is a multilevel skill, typically seen as comprised of syllable awareness, onset-rime awareness, and phoneme awareness.”*

Understanding that words can be broken into syllables is syllable awareness. Being able to separate the first sound(s) in a word — the onset — from the end of the word — the rime — is called onset-rime awareness.

### Phoneme Awareness

Understanding that words can be divided into individual phonemes is called phoneme awareness (or sometimes phonemic awareness). Some educators use the words phonological awareness and phoneme awareness interchangeably.

Whichever term we use, speech sounds are primary. Speech sounds are the basic unit of *form* of spoken language. Speech sounds are combined in conventional ways in order to communicate meaning. When we communicate via written language, the addition of letters adds another layer of complexity. Adding letters to represent sounds adds the layer called phonics.

**Phonics** is the pairing of speech sounds with individual letters or digraphs (letter combinations) that represent sounds.

Although many people automatically think of letters when they think of phonemes, in fact, phonological awareness can be developed prior to the introduction of letters (phonics). And although phonological awareness is required for the mastery of phonics, letters are not required for the development of phonological awareness.

### Hearing and Isolating Speech Sounds Can Be Difficult

Learning to hear the sounds in words (to hear the difference between similar phonemes, identify how many sounds are in a word, and in what order) is an acquired skill. Many people have difficulty learning to hear speech sounds as separate entities and forming solid, separate representations of phonemes.

A breakdown in phonological processing can occur for various reasons:

- decreased peripheral hearing mechanism (hearing loss)
- central hearing disorder (brain processing of sound)
- decreased auditory memory (ability to remember sounds)
- difficulty with auditory discrimination (ability to differentiate one phoneme as distinct from other phonemes)
- poor sound segmenting (ability to break a word into separate sounds)
- lack of instruction in sound identification and manipulation

“Phonemes are different from letters that represent phonemes in the spellings of words. Instruction in phonemic awareness (PA) involves teaching children to focus on and manipulate phonemes in spoken syllables and words. PA instruction is frequently confused with phonics instruction, which entails teaching students how to use letter-sound relations to read or spell words. PA instruction qualifies as phonics instruction when it involves teaching children to blend or segment the sounds in words using letters. However, children may be taught to manipulate sounds in speech without any letters as well; this does not qualify as phonics instruction.”  
(National Reading Panel 2000).

When we talk, sounds are made rapidly and blend together. To the uninitiated, speech is a blur of sound — like listening to a foreign language. Speech reception is primarily an auditory task. We do get some visual information in the form of lip reading, and the speaker provides some information via body language. However most of the message is typically presented auditorily.

Unfortunately not everyone is an auditory learner — many are visual learners and almost everyone benefits from multisensory input. We can make learning about speech sounds easier by providing extra information about those sounds to help us hear, discriminate and remember phonemes more easily.

## **Developing Phonological Awareness**

### **Phonological Awareness in Infancy**

We begin teaching about sounds from infancy onward. When babies coo or babble, we echo back the sounds they make, we playfully repeat syllables ‘bababa’. We isolate sounds and contrast sounds. We encourage vocalization and babbling. These are ways we naturally help our children develop an awareness about speech sounds. As Gail Gillon (2004, p. 2) states:

*“Long before children become explicitly aware of the phonological structure of words, they have developed implicit phonological knowledge that allows them to gain mastery of speaking and listening to their native language.”*

### **Phonological Awareness in Preschoolers**

When children are a little older — preschool age, we can refine auditory awareness by drawing attention to environmental sounds and noises, and to sounds in words. It is at this age (preschool) that we typically introduce children to word play, for example, comparing and contrasting sounds in words when we recite nursery rhymes and read aloud rhyming text. Rhyming manipulates sounds in words by

changing the initial sound(s) (the onset) but keeping the final sounds (the rime). With preschool children, this phonological awareness teaching is usually done incidentally. However, we can explicitly develop an awareness of the sounds in language by helping children hear and isolate sounds in words, and then think of words containing certain sounds. This can be done by reading aloud books that highlight sounds, and playing games about sounds. The idea of heightening awareness about sounds prior to reading is not a new one. Maria Montessori, an avant-garde educator in the early twentieth century played sound games with children to help them hear, isolate and identify sounds in the environment and in speech.

### Phonological Awareness and Reading

There has been great interest in phonological awareness both in the research and academic communities over the past many years due to the link between phonological awareness and reading. Phonological awareness in preschoolers has been shown to be one of the most robust predictors of subsequent reading achievement in kindergarten and first grade. Numerous research studies have shown that early ability to identify and manipulate sounds in words is a good predictor of later reading success. Many of the older students who have not adequately learned to read have difficulty manipulating sounds in words. Gail Gillon (2004, p. 49) summarizes the relationship this way:

*“A vast body of research employing differing methodologies and conducted in a variety of alphabetic languages has convincingly demonstrated that a powerful relationship exists between phonological awareness and literacy development. Indeed, a child’s phonological awareness knowledge has been described as the best single predictor of reading performance.”*

*“The research findings convincingly demonstrate that phonological awareness is crucial for reading and spelling success. Skills at the phoneme level, such as phoneme analysis and deletion skills, have the strongest predictive power for long-term reading and spelling achievement.”*

“The special importance of the sense of hearing comes from the fact that it is the sense organ connected with speech. Therefore, to train the child’s attention to follow sounds and noises which are produced in the environment, to recognize them and to discriminate between them, is to prepare his attention to follow more accurately the sounds of articulate language.”

- Dr. Maria Montessori (Montessori, 1965, p.123)

“Phonological awareness is closely associated with the development of literacy skills in typically developing, language-disordered, and reading-impaired children. ... Training studies have provided convincing evidence for a causal connection between phonological awareness and decoding ability. When phonological awareness is taught, decoding improves.” (Kay-Raining Bird, Cleave, and McConnell, 2000, p. 320).

Phoneme awareness is important because when we learn to read or when we encounter an unfamiliar word, we think of the sounds the individual letters make and blend the sounds together to form words. Children (or adults) who can't break words into sounds and then blend those sounds together will not be able to sound out new words and have to rely on guessing the word based on context.

Since we know phonological awareness is so important to reading success, how can we ensure children develop adequate phonological awareness skills?

### Phoneme Awareness in Reading Programs

Phoneme awareness training is now recognized as an important and necessary element of reading programs, as seen in this quote from the National Reading Panel (2000):

*“Overall, the findings showed that teaching children to manipulate phonemes in words was highly effective under a variety of teaching conditions with a variety of learners across a range of grade and age levels and that teaching phonemic awareness to children significantly improves their reading more than instruction that lacks any attention to PA. Specifically, the results of the experimental studies led the Panel to conclude that PA training was the cause of improvement in students’ phonemic awareness, reading, and spelling following training.”*

“Early intervention for children with speech and language impairment should also specifically aim to facilitate phonological awareness at the phoneme level.”

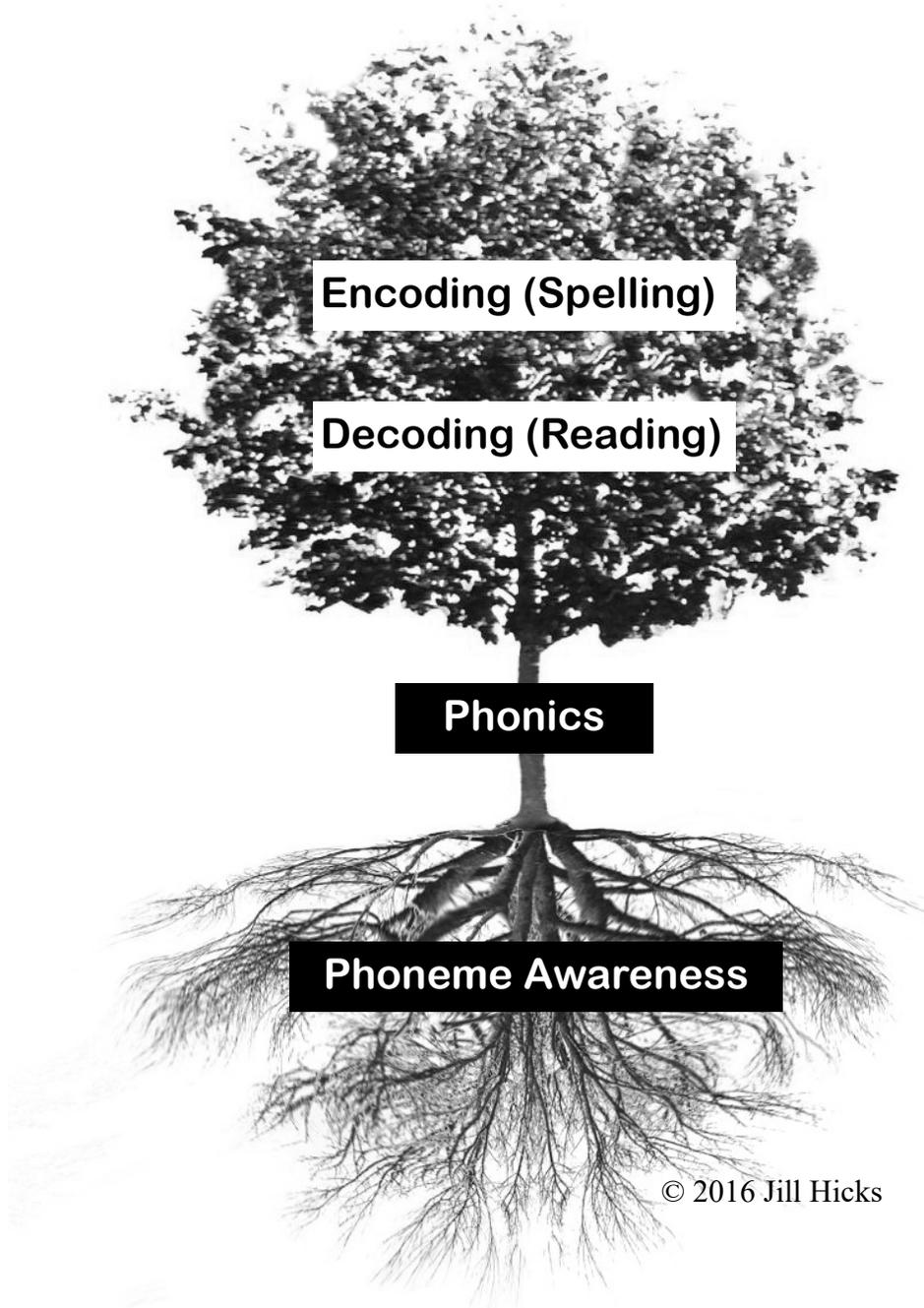
(Gillon and Dodd, 2005, p. 304)

As Gillon (2004, p. 135-8) points out, several key elements should be part of phoneme awareness instruction:

- *exercises at the phoneme level are more important than sentence or syllable level skills, especially for school-aged children*

- *phoneme segmentation and then phoneme blending are the most important phoneme level skills; other relevant phonological skills include onset-rime awareness, phoneme detection, and phoneme manipulation*
- *sound-letter knowledge should be explicitly taught*
- *programs should move at the child's pace with individual or small group work provided for children with severe phonological awareness deficits*

## The Down Syndrome Junction™ Literacy Tree



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Sign Sounds™ is an excellent way to develop the foundational skills necessary for successful literacy learning.

## The Down Syndrome Junction™ Literacy Tree

Basic literacy learning involves learning to read and write. We can think of literacy learning like the parts of a tree. If reading and spelling are like the branches and leaves on the tree, then phoneme awareness and phonics are like the roots and trunk of the tree. Phoneme awareness and phonics are the basis, or foundation for reading and spelling. They are often the less considered but still crucial, parts of literacy learning.

So when we think of a child learning to read and spell, we should start with the most foundational skill of phoneme awareness. Giving a child facility with phoneme awareness enables him to have a strong foundation for literacy.

A key thing to remember here is that phoneme awareness is not the same as phonics. Phoneme awareness does not necessarily include letters. We need to teach children how to *hear* and identify individual sounds in *spoken* words. We need to hone their ability to parse a spoken word into its individual parts (phonemes). Time spent working on this “hidden” skill will result in huge rewards later on when a child encounters the printed word. For if he has a foundation of hearing and identifying the individual sounds in words, and also learns how the sounds link with letters (phonics), he will have a *strategy* for dealing with print.

Learning to parse a word into sounds will seem foreign at first since the child has learned the word as a whole. But by giving lots of examples, and using repetition you can help children learn this new concept. In addition, we can make the idea of individual sounds in words more readily accessible when we highlight individual sounds with the Sign Sounds hand cues. In this way we take a difficult concept and use a concrete visual-tactile form to make the concept more understandable.

## Sign Sounds™ to Develop Phoneme Awareness

Sign Sounds™ hand cues are a successful tool to help children learn about speech sounds and develop phoneme awareness. Seeing and feeling the sound with the hand in addition to hearing and saying the sound gives extra information which helps develop the sense of each phoneme as a unique separate entity, different from every other phoneme.

SS hand cues are beneficial because they are visual and tactile-kinesthetic.

### Sign Sounds™ Hand Cues Are Visual

Sign Sounds™ hand cues *highlight speech sounds*. The hand cues provide crucial visual information about each phoneme:

- where the sound is made (bilabial, alveolar, velar, nasal)
- how the sound is made (a plosive or continuant)
- whether the sound is voiced or voiceless
- whether the sound is a consonant, vowel or diphthong
- any special characteristics of the phoneme (lip rounding or spreading)

Importantly, the Sign Sounds hand cues *last longer*. They don't disappear as fast as sounds do. So not only do the hand cues give lots of important information about the identity of a phoneme, but they last long enough to allow processing and memory storage of this information.

### Sign Sounds™ Hand Cues Are Tactile-Kinesthetic

SS hand cues provide not only visual information but they allow one to *feel* the phoneme and *movement* of the phoneme with the hand. This provides multisensory learning.

Sign Sounds™ hand  
cues are  
*multisensory*

auditory — what we  
hear  
visual — what we see  
tactile — what we feel  
kinesthetic — what we  
move

Kinesthetic information is given about the movement of the articulators during sound production.

### Sign Sounds™ Hand Cues Help Distinguish Phonemes

*“Phonemes are an abstract concept. When words are spoken the listener does not hear the separated phonemes in words. Rather, phonemes are blended into syllables within the sound stream. Individuals must learn to perceive phonemes in speech”*

*(Gillon, 2004, p. 7).*

Since each hand cue is distinct, the extra visual and tactile-kinesthetic information given by the hand cue helps form a *distinct representation* of each phoneme. The hand cues are especially important to help differentiate phonemes that sound similar. For example, many children confuse voiced and voiceless pairs since they sound similar and are produced identically except for voicing. If the Sign Sounds hand cues are used, children can readily tell the phonemes apart since the voiceless sound hand cues all use one finger and the voiced sound hand cues all use two fingers. Vowel sounds are particularly difficult for many people to tell apart by sound alone. For example, /a/ can be confused with /e/ making no distinction between ‘man’ and ‘men’. With the addition of the Sign Sounds hand cues it becomes much more obvious which vowel sound is being said. If the hand cue for /a/ or /e/ is used, ‘man’ versus ‘men’ is easily interpreted.

### SS Hand Cues Develop Phoneme Awareness

Having solid representations of phonemes enables children to hear, and manipulate phonemes in words — in other words, Sign Sounds™ hand cues increase phoneme/phonological awareness skills.

Consonant pairs that are articulated the same but differ only by voicing are:

<u>Voiceless</u>	<u>Voiced</u>
p	b
t	d
k	g
f	v
s	z
sh	ge

## Phonological Awareness Activities

### Key Points

- Say the SOUND, not the letter name. Slash marks /.../ indicate the sound.
- Pair the sound with its hand cue.
- Don't add a vowel when you say a consonant sound. For example, say /b/, not 'bee' nor 'buh'.
- Make sure you say/show the *sounds* in a word (don't get confused by the letters). For example, 'shoe' has two sounds /sh/ + /ew/, 'tree' has three sounds /t/ + /r/ + /ee/, 'one' has three sounds /w/ + /u/ + /n/, 'dogs' has four sounds /d/ + /o/ + /g/ + /z/.
- Hand cues can be used silently (without saying the sound) to cue the child to say the correct sound.
- Teach before you test. Give lots of examples before asking the child to give examples or answer questions.
- Incorporate phonological awareness skill development in a variety of teaching activities.

### Where to Start

- The first goal is to help the child/student understand the concept that a word is made up of parts.
- The initial sound in the word is usually the easiest sound for children to isolate from the rest of the word. So, being able to hear and identify the initial sound in a word is a good place to start (initial phoneme awareness).
- The adult will need to do a LOT of modeling at this stage to help the child/student grasp the concept. Give lots of examples, and also repeat the same examples over many days.
- Use short familiar words that the child/student already has in his vocabulary. Having a real object for the word, or a photo of the word will also make phoneme awareness easier to learn.
- Model beginning sound identification throughout the day during other activities. For example if you're telling a story about Bobby and his wagon, you can say "Bobby starts with /b/. Wagon starts with /w?". Use the Sign Sounds™ hand cue each time you highlight a sound.

## Phoneme Identification and Production

### Name Game

Goal: Children will learn and then be able to say the first sound of their name.

Procedure: This can be played individually or in a small or large group.

- Adult says, “We’re going to play the Name Game”. “My name is \_\_\_\_\_. \_\_\_\_\_ starts with /.../”.
- When you say the name, use the hand cue for the initial sound of the name. For example, “My name is Kathy. Kathy starts with /k/.” (Use the /k/ hand cue for ‘Kathy’ and /k/.) For example, “My name is Mrs. Smith. Smith starts with /s/.” (Use the /s/ hand cue for ‘Smith’ and /s/.)
- Adult points to each child in order and says their name and the first sound of their name with the hand cue. Encourage children to imitate the sound and hand cue.
- Next time, the adult starts the game and each child says his/her name and the initial sound. “My name is \_\_\_\_\_. \_\_\_\_\_ starts with /.../”.

“My name is Shelley.  
Shelley starts with /sh/”.



“My name is Tom.  
Tom starts with /t/”.



## Learning that words have sounds

### I Hear Sounds Song

Goal: To develop representations of individual speech sounds.

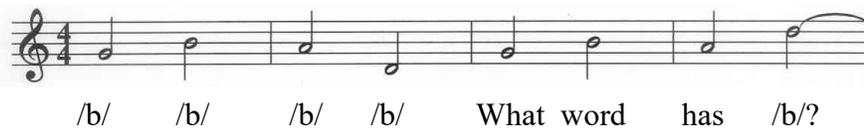
Procedure:

- Sing the “I Hear Sounds” Song slowly and clearly.
- Do the Sign Sounds™ hand cue every time the target sound is said alone or at the beginning of a word.
- Encourage children to sing along and make the hand cues as they sing.



### I Hear Sounds Song

© Jill Hicks



## Phoneme Identification and Production

### Sound Game

**Goal:** To help preschool and school-aged children learn that words are made up of individual speech sounds, to learn Sign Sounds hand cues for beginning sounds, and to become aware of specific phonemes in words.

**Procedure:** This can be played individually or in a group.

- Teach one sound at a time.
- Begin with easy consonant sounds such as /m, p, w, h, b, t, d, n, k, g/.
- Introduce the sound by itself with the hand cue. For example, say /b/ and use the Sign Sounds™ hand cue for /b/.
- Encourage the child(ren) to *imitate the sound and the hand cue*.
- Assemble objects that all start with the same sound such as ‘ball, baby, bib, block, bus’.
- Pull the objects out of a bag one at a time. For each object say, “(ball). (ball) starts with /b/”. Use Sign Sounds hand cues each time you say the /b/ sound.
- Encourage children to say the object name using the hand cue for the beginning sound, and then to say only the initial sound with the hand cue.
- Have each student draw a picture of a word that starts with /b/. Put all the pictures up on the wall, or assemble them in a scrapbook.
- Review the pictures regularly, drawing attention to the particular sound and hand cue shown in the pictures.



**Extension Activities:**

- Assemble objects, such as farm animals, that start with a variety of consonant sounds you have previously taught. Work toward the children being able to say the initial phoneme + hand cue on their own.
- Identify and say the last sound in a word.
- Identify and say the middle sound in a word.



## Phoneme Identification and Production

### Sound Detective

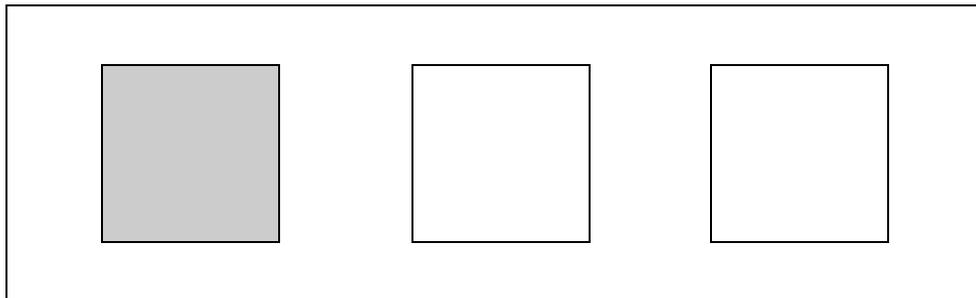
Goal: Children will recognize individual phonemes in words, and be able to say words containing individual phonemes.

Procedure: This can be played individually or in a group.

- Prepare a word list of short familiar words that have sound(s) you have previously presented, such as /b, m, k/.
- Say, “I’m going to say a word. You be the detective. Tell me if you hear /.../ ? Use the hand cue when you say the sound. For example, “Mug. Do you hear /m/ ?” “Lamb. Do you hear /m/ ?” “Car. Do you hear /m/ ?”
- Make this into a game by having the child choose a green token if the sound is in the word, and a red token if the sound is not in the word. The child can put the green or red token into a can or jar.
- Once the child/ren are familiar with the sound detective game, have a **child** give a word and ask, “Do you hear /.../ ?”, using the hand cue when s/he says the sound.

Extension Activity:

- Make a template out of heavy card stock with outlines of three squares.
- When the child hears a particular sound in a word, he also puts down a coloured card showing where the in the word he heard that sound (beginning, middle, or end).



Extension Activity

## Phoneme Identification and Production

### I Spy Sounds

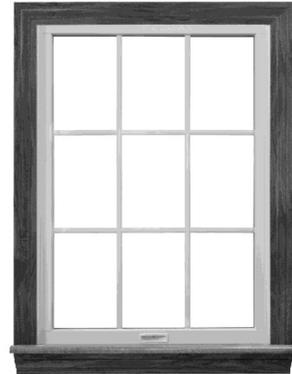
Goal: Children will recognize individual phonemes in words, and be able to say words containing individual phonemes.

Procedure: This can be played individually or in a group.

- Have a mental list of sound(s) you have previously presented.
- Say, “We’re going to play I Spy. Spy means see. I spy with my little eye something that **starts** with /.../.” **Use the Sign Sounds hand cue when you say the sound.** Repeat the sentence using the word see, “I see with my eye something that starts with /.../”. Look around the room to indicate the word is something you see.
- Give children a chance to guess words. If they guess a word that doesn’t contain the sound you said say, “ \_\_\_ doesn’t start with /.../ . Think of something that starts with /.../”. **Use the Sign Sounds hand cue when you say the sounds.**
- If child guesses a word that starts with the sound you said respond, “Excellent. Hair has /h/. That’s what I saw.” Or “Excellent. Hair starts with /h/. But I spy something else that starts with /h/”.
- Once children understand the game, give them the chance to say “I spy with my little eye something that starts with /.../”. Help children get the idea of finding the word first and then thinking of the first sound in the word. (We want to avoid the child just saying any sound that pops into his/her mind, without thinking of a word first.)

Extension Activity:

- I spy with my little eye something that **ends** with /.../. Use the Sign Sounds hand cue for the last sound in the word.



## Onset-Rime Awareness

### Rhyming Song

Goal: Children will learn what rhymes sound like. Children will learn what the concept 'rhyme' means. Children will be able to think of words that rhyme.

Procedure:

- Sing the rhyming song, with music below. This song is also on *The Dog is Barking* DVD (available from [www.downsyndromejunction.com](http://www.downsyndromejunction.com)).
- As you say the rhyming words, use the hand cue to highlight the *onset* (e.g. /c/ in 'cat', /m/ in 'mat', /h/ in 'hat') or *the rime* (e.g. /a/ in 'cat, mat, hat').
- Choose simple, short familiar words. Three sound (consonant-vowel-consonant) words are easiest.
- Sing the song daily until the children can fill in the words themselves.
- Carry-over the concept of rhyming as it occurs in other contexts. For example, if you're reading *The Cat in the Hat*, draw attention to the rhyme by saying. "Cat, hat. They rhyme. They sound the same at the end."
- Give lots of positive reinforcement if a child identifies a rhyme during other activities.



### I know some words that rhyme

Jill Hicks



I know some words that rhyme.



I know some words that rhyme.



What rhymes with hen? Ten.



Men. Pen. Den.



## Phoneme Segmentation

### Word Breaker

Goal: To develop the ability to break a word into its component sounds, beginning with two-sound words.

Procedure:

- Say a two-sound word from the list below. Then say each sound in the word with the hand cue. For example, “Up. Listen to the sounds: /u/ /p/”.



- Have the children imitate saying each sound and hand cue.
- Say the word, and have the children give the sounds and hand cues.

### Two-sound word list

at          an          Ed          it          in          on          off          up

### Extension Activity

- Once children can break two-sound words apart, demonstrate breaking three-sound words.
- Choose short, familiar words. Consonant-short vowel-consonant words are easiest to start with.
- You can choose words that build on the two-sound words you have already practiced such as:

cat mat sat bat pat hat can pan man ran fan  
 red bed head said fed sit mitt hit lit pit  
 pin tin fin win bin Ron gone Don fawn  
 cough cup pup

- Remember to have the child make the Sign Sounds hand cue every time he/she says the sounds in the word.

Note: It is the sounds that are important. Sign Sounds™ hand cues go with each sound. So ‘Ron, gone, Don, fawn’ all have 3 sounds, and ‘cough’ has 3 sounds: /k/ /o/ /f/.

## Phoneme Blending

### Word Builder

Goal: To develop the ability to blend sounds together to form a word, beginning with two-sound words.

Procedure:

- Tell the children you are going to give them the sounds in a word.  
They are going to be word builders and figure out the word.
- Choose a two-sound word. Say the first sound + hand cue in the word. Pause.  
Say the second sound + hand cue in the word.  
For example, “/a/ pause /t/”.
- Have the children figure out the word.



### Two-sound word list

at      an      Ed      it      in      on      off      up

### Extension Activity

1. Let the children take a turn at giving two sounds for others to build into a word.
  2. Once children can blend two-sound words, give them three sounds to blend.
    - Choose short, familiar words. Consonant-short vowel-consonant words are easiest to start with.
    - You can choose words that build on the two-sound words you have already practiced such as:
 

cat mat sat bat pat hat can pan man ran fan  
red bed head said fed sit mitt hit lit pit  
pin tin fin win bin Ron gone Don fawn  
cough cup pup
- Remember to have the child make the Sign Sounds hand cue every time he/she

## Phoneme Segmentation

### **Block Break** (illustrated on next page)

**Goal:** To develop the ability to break a word into its component sounds, beginning with two-sound words.

**Procedure:**

- Assemble 8 coloured blocks, 2 of each colour. For example, 2 red, 2 blue, 2 green, 2 yellow.
- Make a sheet with a lined box at the top of the page and two small boxes underneath (as shown on facing page).
- Place the 8 blocks in the large square.
- Choose a word from the list below.

Two-sound word list

at   an   Ed   egg   it   in   on   off   up

- Say the word, and demonstrate breaking the word by saying each sound with the hand cue, with a pause between the sounds.
- As you say the first sound + hand cue, drag one block into the left small box.
- As you say the second sound + hand cue, drag one block (of a different colour) into the right small box.
- Remember the blocks represent a sound so ‘off’ has two blocks: /o/ and /f/.
- Put the blocks back in the large box and say a different two-sound word. Ask the child to **break the word into sounds** with the blocks. The child/ren should say each sound in the word + hand cue at the same time that they pull down a block to represent the sound.
- Continue with other words. Demonstrate if the child is having trouble. Use the hand cues to help children hear/see the different sounds.

**Extension Activity**

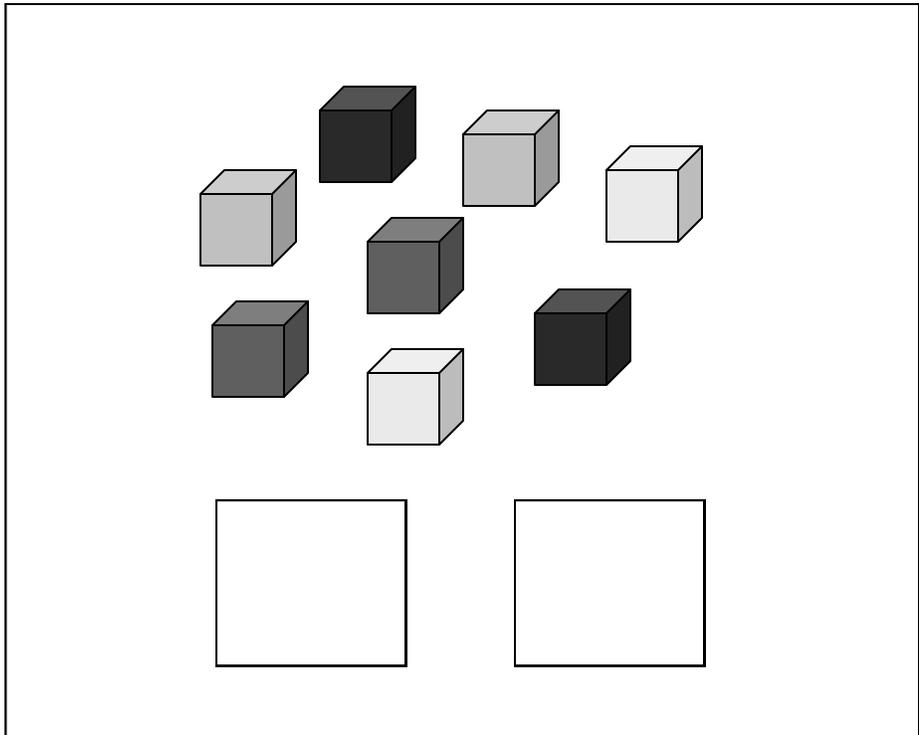
- Play Block Break with three sound words such as ‘fun, top, lip, ten, wet, ball, etc.’ Use the same colour block for the same sound. For example, ‘pup’ would have the same colour block for the beginning and end sounds.
- Play Block Break with four sound words such as ‘cats, truck, help, snap’.

## Phoneme Segmentation and Blending

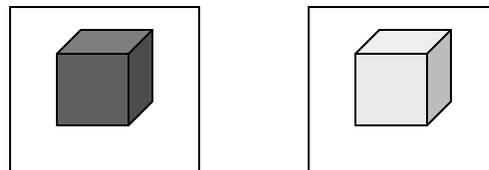
Illustration of Block Break.

Different coloured blocks are used to represent different speech sounds.

For two-sound words, there are two outlined boxes, for three-sound words there are three outlined boxes, etc.

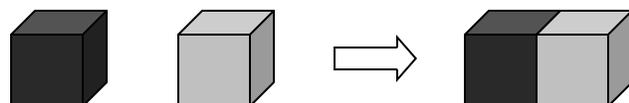


**Block Break** shows breaking the word “egg” into two sounds. One block is put in the first outlined box for the sound + hand cue for /e/. The second block is put in the second outlined box for the sound + hand cue for /g/.



The word in is broken into two sounds.

**Block Blend** starts with saying each sound + hand cue, separately shown by two separate blocks. When the word is said as a whole, the blocks are pushed together to show the blended word.



Each sound given separately is joined into a word.

## Phoneme Blending

### **Block Blend** (illustrated on bottom of facing page)

**Goal:** To develop the ability to blend two sounds into a word, beginning with two-sound words.

**Procedure:**

- Assemble 8 coloured blocks, 2 of each colour. For example, 2 red, 2 blue, 2 green, 2 yellow.
- Choose a word from the list below.

Two-sound word list

at   an   Ed   egg   it   in   on   off   up

- Say each sound + Sign Sounds hand cue in the word with a pause between the sounds.
- As you say the first sound, drag one block below the group of blocks.
- As you say the second sound, drag a second block (of a different colour) beside the first block, leaving a space.
- Remember the blocks represent a sound so 'off' has two blocks: /o/ and /f/.
- Then say the sounds together to make the word, and as you do so, push the blocks together to show how the two sounds make the word.
- Continue with other words. When the child/ren are able, you say just the two sounds + hand cues, and have them say the word while pushing the blocks together.

**Extension Activity**

- Play Block Blend with three sound words such as 'fun, top, lip, ten, wet, ball, etc.' Use the same colour block for the same sound. For example, 'pup' would have the same colour block for the beginning and end sounds.
- Play Block Break with four sound words such as 'cats, truck, help, snap'.

## Study Questions Chapter 3

1. Define phonological awareness \_\_\_\_\_  
\_\_\_\_\_
2. According to numerous research studies, what is the relationship between a child's phonological awareness skills and the child's ability to read and spell?  
\_\_\_\_\_
3. According to Gail Gillon
  - a) Which are most important? \_\_\_\_\_ syllable level skills, or \_\_\_\_\_ phoneme level skills?
  - b) What are the two most important phoneme-level skills?\_\_\_\_\_
4. Define phoneme awareness \_\_\_\_\_  
\_\_\_\_\_
5. Phoneme awareness is like what part of a tree? \_\_\_\_\_
6. How can we make the novel concept of breaking a spoken word into sounds more concrete?  
\_\_\_\_\_
7. Explain what it means to teach as opposed to test, and why it is important to teach phoneme awareness before testing. \_\_\_\_\_  
\_\_\_\_\_
8. Rate what sounds are the easiest to hear and identify in words (first, middle, last):  
easiest: \_\_\_\_\_  
second easiest: \_\_\_\_\_  
hardest: \_\_\_\_\_

## Notes



# Chapter 4

## Reading

Reading is an important skill to learn in our society. In school, the amount of information presented through print increases as students progress through elementary school and into high school. Reading is a common and pervasive part of adult life. The importance of reading, combined with the fact that reading is not universally mastered, has led to much thought, speculation and discourse on the subject.

### An Alphabetic System

So how do children learn to read? Since English is an ‘alphabetic’ written language, letters correspond to speech sounds. An alphabetic code is efficient since it uses a limited set of symbols to communicate (as opposed to a pictographic code that has a different symbol for each word, as in Chinese.)

Rhea Paul (2001, p. 399) addresses the advantages and disadvantages of an alphabetic writing system:

*“An alphabetic writing system is extremely economical in terms of the load it exerts on the memory, since there are a relatively small number of symbols to learn. But it requires a great deal of phonological awareness, the ability to break words down into component sounds. The efficiency of an alphabetic system is obvious if you’re trying to design a typewriter. But the concept of an alphabetic cipher is relatively unnatural. .... The fact that alphabetic writing spread to many cultures is attributable to its efficiency, not to its naturalness. These facts strengthen the prediction that reading in an*

*alphabetic writing system is not going to come naturally to every individual. There are lots of reasons to expect that it will be somewhat hard to learn, at least for some people, and that most people will need a little help, in the form of direct instruction, in breaking into the alphabetic code.”*

### Logographic Reading

When we learn to read by recognizing words as a whole, by sight, from memory, what is happening can be called ‘logographic reading’. Some ‘reading’ programs boast they can teach even two- and three-year olds to read by this whole word method. The disadvantage of such an approach to reading is that you can then only ‘read’ words you have already learned. There is no way to reliably figure out the meaning of new words. Such a system places a huge load on visual memory, both for recognizing words and for reproducing words when printing. Although even very young children learn to recognize printed symbols in their environment, logographic reading is very limiting. As Gail Gillon (2004, p. 19, 22-3) points out:

*“Learning words visually by rote may prove a successful technique in the early stages of reading, but as texts increase in complexity, learning the arbitrary visual shape of a word and attaching it to its meaning (without any cues from phonological information to assist memory) becomes unmanageable. ... Share (1995) argued that because positive correlations between “logographic reading” and skilled reading have not been demonstrated, it is best to consider it a prereading activity.”*

*“Even by the second year of schooling, children who do not make use of phonological cues in reading, but rely solely on whole word recognition, are likely to be the poorest readers.”*

“When children are unable to link phonemes to corresponding letters, they are unable to progress beyond a “logographic” (i.e. visual recognition, sometimes called “partial word reading”) stage of literacy (Frith, 1985). Knowledge of sound-letter associations allows children to decode printed words (i.e.. read unfamiliar words or nonwords) and to construct the spellings of words in their spoken vocabulary....Such tasks require the identification and segmentation of individual phonemes and an awareness that letters represent speech sounds.”  
(Dodd and Carr, 2003, p. 128-9)

Patricia Oelwein (1995, p. 111) writing about children who learn to read sight words only says, “Even though most words eventually become sight words, words are learned and remembered much easier when your child has more tools — the ability to apply letter sounds, phonic rules, and rules of syllabication to reading words that are not already in their sight vocabulary. These learners will be able to continue to increase their reading vocabulary independently, by “sounding out” words, whereas learners who are not able to use these concepts are dependent on others to teach them new words, limiting the number and variety of words they will learn.”

## Phonics

Phonics is the pairing of speech sounds with individual letters or digraphs (letter combinations) that represent sounds. In order to learn to read or ‘decode’ printed words, children must learn the sounds that go with the letters. When they encounter a word, they must say the sound for each letter (sound segmenting), then combine the sounds (sound blending) to form the word, and link the word with meaning. Given the skills required, learning to read can be particularly challenging for anyone experiencing difficulty with:

- hearing
- auditory discrimination
- auditory processing
- visual perception
- memory
- cognition

Given the nature of the skills involved in reading, it is important that reading programs emphasize explicit, systematic development of *phonological awareness skills and phonics skills*. Children need to hear individual sounds and they need to match individual sounds with letters (graphemes). Phonics is the system that helps children learn to match graphemes with phonemes in order to obtain meaning from a string of letters.

The National Reading Panel (2000) concluded that:

*“...systematic phonics instruction produces significant benefits for students in kindergarten through 6th grade and for children having difficulty learning to read. The ability to read and spell words was enhanced in kindergartners who received systematic beginning phonics instruction. First graders who were taught phonics systematically were better able to decode and spell, and they showed significant improvement in their ability to comprehend text. Older children receiving phonics instruction were better able to decode and spell words and to read text orally...”*

## Sight Word Reading

Once a child has repeatedly decoded a word, that word is then stored as a whole and its meaning can be accessed directly without ‘sounding out’ the letters. At that point, the word in question has become a *sight word*. As we progress in reading proficiency, a greater and greater percentage of the words we read are interpreted as sight words. At that point, we use phonics only when we encounter unfamiliar words. The transition from using phonics to decode print, to immediate sight word recognition has been summarized as follows (Murray, B., 2005):

*Children learn sight words in just a few quality encounters. Quality encounters connect letters in a spelling to phonemes in the pronunciation, usually by sounding out and blending. In other words, we typically learn sight words through careful decoding. Though decoding demands great attention in young readers, it sets up reliable access routes to retrieve the word. Once the access route is established, the tools to build it (correspondence rules) drop out. The spelling becomes a meaningful symbol of the spoken word (i.e., it “looks like” the word). Learning to decode dramatically reduces the number of trials to sight recognition from an average of 35 trials to an average of 4 trials.*

The importance of systematic phonological awareness and phonics instruction to teach reading is now both well documented and widely accepted. Just as we have seen how Sign Sounds™ hand cues are a simple tool to develop phonological awareness, we will look at how to use Sign Sounds™ hand cues to develop phonics and hence, reading skills.

“Although conventional wisdom has suggested that kindergarten students might not be ready for phonics instruction, this assumption was not supported by the data. The effects of systematic early phonics instruction were significant and substantial in kindergarten and the 1st grade, indicating that systematic phonics programs should be implemented at those age and grade levels. “  
(National Reading Panel, 2000)

## Sign Sounds™ to Teach Reading

Sign Sounds™ hand cues are direct representations of individual phonemes. Each hand cue is distinct and unambiguously and directly represents a single phoneme. As we have already seen, the hand cues can be used to increase phonological awareness (knowing that words are made up of sounds and how to manipulate sounds in words.) However, Sign Sounds™ hand cues can also be used as a tool to support phonics instruction. To teach phonics, each *sound and hand cue* can be paired with a letter. In this way the letter comes to represent the sound itself.

### Build From Phoneme Awareness to Phonics

We can teach about speech sounds independently of letters. In fact phoneme awareness instruction prior to the introduction of letters is recommended. If children already know about speech sounds it will be easier for them to learn phonics. If you teach phoneme awareness using Sign Sounds™ hand cues, it is easy to build on a system the child already knows when you begin to teach the sounds that go with letters.

### Sign Sounds™ Hand Cues Are Simple

The beauty of Sign Sounds™ hand cues is that they are a direct representation of the phoneme, without an additional layer of *semantic load*. Phonics instruction that uses cues with semantic content adds an additional layer of complexity to the already complex task of decoding print. For example, some phonics programs require the association of an arbitrarily chosen idea for each sound. For example — one phonics program requires the association of tennis for ‘t’ — with the head moving from side to side as if watching a tennis game. That kind of association requires:

- previous knowledge (what tennis is and that the ball moves from side to side during a tennis game);
- cognitive association of the head moving back and forth to represent the tennis ball moving back and forth
- the arbitrary movement (not directly associated with the articulation of ‘t’) of the head from side to side to represent ‘tennis’;

- pairing of the word ‘tennis’ with the sound ‘t’.

Contrast such a complex phonics system with Sign Sounds™.

Sign Sounds™ hand cues:

- do not require previous knowledge about the world
- do not require higher level cognitive associations
- do not require the association of a particular word with the sound

“Everything should be made as simple as possible, but not simpler.”  
~Albert Einstein

That is why Sign Sounds™ can be used with very young children, students with cognitive delay and learning differences, *as well as* students of average and above-average ability.

### A Focus on Sounds

Sign Sounds™ hand cues directly connect the hand cue with the sound. PT&S hand cues *focus on the sound* because they are directly tied to how and where the sound is made.

### First Phoneme Awareness

Early literacy development should begin by teaching about speech sounds. This can be accomplished by pairing PT&S hand cues with speech sounds. The additional visual and tactile-kinesthetic information supplements the fleeting auditory information, and thus develops a sense of each phoneme as a distinct entity.

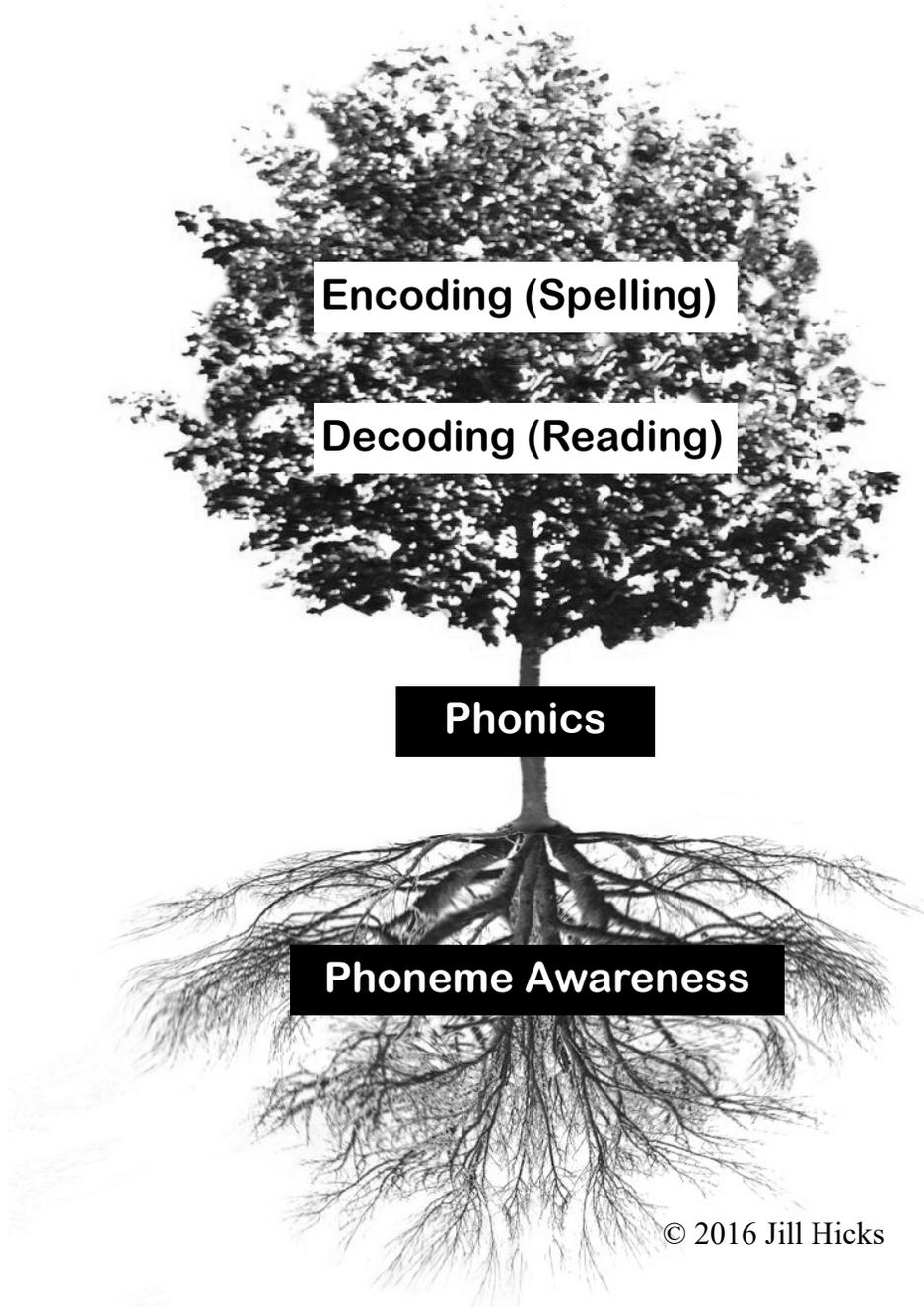
### Second Phonics

Given foundational knowledge about speech sounds, the next step in literacy development is to teach about letters. This can be accomplished by pairing Sign Sounds™ hand cues with speech sounds and the letters that represent the sounds. Using a system the student already knows (sounds + hand cues), allows the student to more easily navigate the additional burden of pairing letters with the sounds, required for reading.

### Teach Word Families

It is helpful to teach word families. In this way, children will learn con-

## The Down Syndrome Junction™ Literacy Tree



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The Down Syndrome Junction™ Literacy Tree reminds us of the importance of teaching phoneme awareness and phonics as a foundation for reading and spelling. When the PTS hand cues + sounds are paired with letters, children learn a way to make sense of print. Phonics gives students a *strategy* for sounding out words (reading) and for spelling.

### Sign Sounds™ Photo Cards

As discussed in chapter one, Sign Sounds™ photo cards include a photo showing the hand cue for each speech sound plus one main letter/letter combination for each sound (shown on the front of the photo card).

The photo cards can be used to help students learn phonics. Students learn to match the phoneme with the grapheme (letter) when they are required to point to the photo card that matches a sound given orally; and when they are asked to say the sound that goes with a photo card. Photo cards can also be placed in order for the student to sound out, then blend together and read as a word. See Photo Card Sound ID, Photo Card Sound Segmenting, and Photo Card Sound Blending activities on the following pages.

### Teach One Sound For Each Letter

In order to avoid confusion, beginning phonics instruction should use one letter/letter combination to represent each speech sound. The letter (s) on the front of each Sign Sounds™ photo card follow this principle. The letter(s) on the front of each photo card are different for each phoneme, and can be considered the ‘main’ way to spell that sound.

Consonants are easier than vowels in this respect because many consonant sounds have just one grapheme representation.

### Teach Multiple Spellings For Each Sound

Once a student has learned to decode the main spelling for a phoneme, he should be introduced to alternate spellings for the phoneme. This should be done systematically with familiar word examples. Using the Sign Sounds™ hand cue for the sound helps the student know that the *sound* is the same but the *spelling* varies. Compound vowels are particularly challenging as they typically have multiple spellings.

“Early reading instruction requires explicit instruction in strategies for word recognition. Letter-sound blending and learning familiar word patterns (i.e., “word families”) are important and compatible strategies in teaching word recognition to students with reading disabilities.” (Wanzek and Haager, 2003, p. 33)

“Importantly, learning to read in alphabetic orthographies depends critically upon phonological skills that, in turn, play a reciprocal role in reading and spelling development.... However there is more to reading than phonology, and language skills outside of the phonological module are important...” (Snowling, 2002, p. 410)

sistencies of print, and the sounds that go with groups of letters. So for example, we would teach ‘cat, bat, mat, rat, sat, pat, fat’ and ‘sigh, high, thigh, sight, right, fight, night’.

### Sign Sounds™ Hand Cues Develop Reading

PT&S hand cues are a simple, readily accessible tool to develop phoneme awareness and phonics and hence, reading skills. The PT&S hand cue remains a stable representation of the speech sound as the student learns to match sounds with letters.

Sign Sounds™ hand cues provide extra visual and tactile-kinesthetic information which can be used both to develop and access the various components skills for successful reading:

- hearing and discriminating sounds
- matching sounds with letters
- memory storage and retrieval of sounds and letters
- cueing into words to link the sounds (phonology) with meaning (semantics)
- cueing into sentence structure (syntax) to allow accurate comprehension of text

Using PT&S to develop language (semantics and syntax) is discussed in chapter 6.

# Phonics Activities

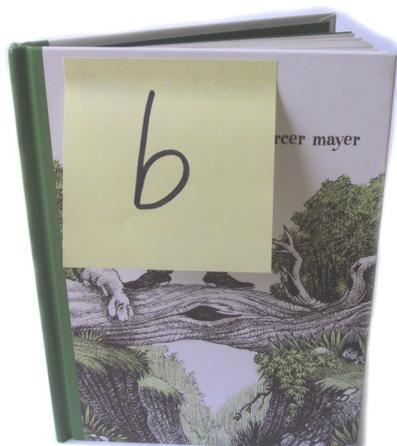
## Sound-Letter Matching

### Sticky Sounds

Goal: For children to link speech sounds with the letters that represent the sounds starting with the beginning sound of familiar object words.

Procedure:

- Get a pad of sticky notes.
- Choose a sound of the day or week such as /m, p, t/.
- Say, “Some words start with /t/. (Do the hand cue when you say /t/.) Let’s find words that start with /t/.”
- Walk around the house or classroom and identify objects that start with /t/ such as ‘table, t.v., teddy bear, telephone, ten, top’.
- Print ‘t’ on each sticky note. Have the child put the ‘t’ sticky note on each /t/ object.
- Encourage the child to say the object name, the first sound and the hand cue.
- The next day, review the words that start with /t/.
- Another day, remove the sticky notes ahead of time and see if the child can find where they should go. Make sure to highlight the /t/ sound in each /t/ word by using the hand cue.
- Continue Sticky Sounds with other sounds/letters on other days or weeks.



## Sound-Letter Matching

### **Sound Scrap Book**

Goal: Children will identify the initial sound in a word, and match it with the corresponding letter.

Procedure:

- Label the top of each double page with a letter (or letter digraph such as 'th' or 'sh').
- Cut out pictures from magazines. Each day, look for pictures that start with a certain sound that is in your sound scrap book such as /m, t, l, f, s/.
- Say the sound at the beginning of the word with the corresponding Sign Sounds™ hand cue.
- Glue the pictures on the page with the letter that corresponds to the beginning sound in the word.
- Regularly (once a day or once a week), add a new sound/letter to your scrap book.
- Review your sound scrap book, saying the sound + hand cue for each page, and at the beginning of each word.

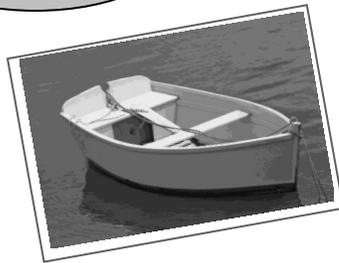
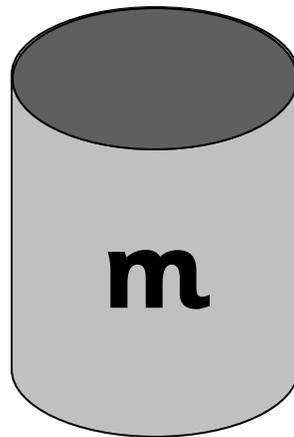
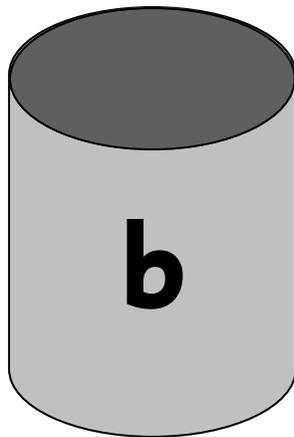
## Sound-Letter Matching

### Can It

Goal: Children will identify the initial sound in a word, and match it with the corresponding letter.

Procedure:

- Label large cans or plastic pails with letters.
- Assemble pictures (or photos) that start with certain sounds such as 'boat, ball, bed, man, map, mic'.
- Show a picture, say its beginning sound with the Sign Sounds™ hand cue and put it in the can with the corresponding letter.
- If children are just learning sound-letter matching, adult should say and sort all the pictures first and then give children a turn.



## Sound-Letter Matching

### Sound Hop

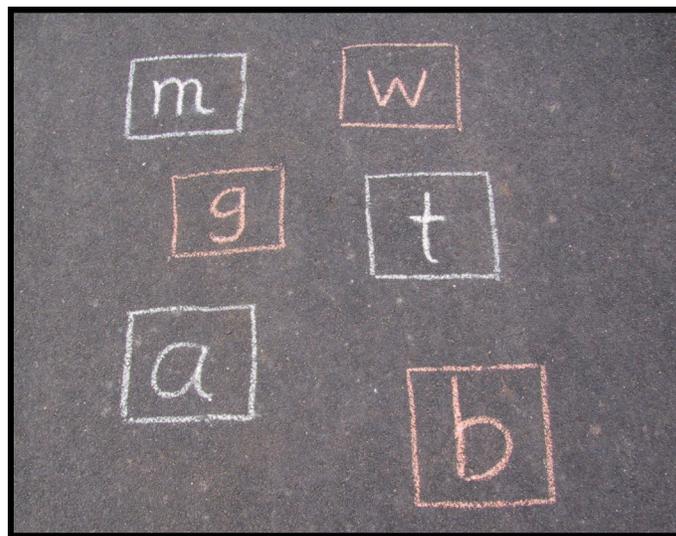
Goal: Children will match sounds with letters, practicing sound-letter pairs they have seen before.

Procedure:

- Use chalk to draw 1 foot by 1 foot boxes on pavement. In each box, print a letter (or letter combination such as 'sh'). If you can't draw on pavement, print letters on sheets of construction paper.
- Say a sound with the Sign Sounds hand cue and have the child/ren step on the corresponding letter.
- If a child steps on the wrong letter, show him/her which letter to stand on.

Extension Activity:

- Have a child call out the sound with the hand cue.





## Sound Blending

### Photo Card Sound Blending

Goal: To develop the ability to say the sounds for each letter in a two- or three-sound word, and then blend the sounds together to say the word.

Procedure:

- Lay out the short vowel Sign Sounds™ photo cards in this order:  
a e i o u
- Lay out consonant Sign Sounds™ photo cards under the short vowel cards.
- Take two PTS photo cards, and place them in order in front of the child.
- The child should say each sound + hand cue and then say the word.
- If necessary help the child blend the sounds together by reducing the pause between the sounds when you say them for the child to hear.
- Once the child is able to blend two-sound words, progress to three-sound words.



Student says and blends the sounds on the cards to make the word 'up'.

## Sound-Hand Cue-Letter Matching

### Photo Card Sound ID

**Goal:** To match sounds and hand cues with the letters that represent the sounds.

**Procedure:**

- Say a sound and its matching Sign Sounds™ hand cue. Then show the Sign Sounds photo card for the sound.
- For children just learning sound-letter correspondence, start with easy consonant sounds such as /p, b, t, d, k, g, m, n, s/ and then /z, f, v/ and short vowel sounds starting with /a, i, o/ and then /e, u/.
- Once you have introduced 2 or more photo cards lay them out on the table in front of the child. Go through the following sequence:
  1. **Receptive With Hand Cue:** Adult says the sound with the hand cue and the child points to the matching photo card.
  2. **Expressive With Hand Cue:** Adult points to a photo card, and the child says the sound with the hand cue.
  3. **Receptive Without Hand Cue:** Adult says a sound and child points to the matching photo card.
  4. **Expressive Without Hand Cue:** Adult points to a photo card and child says the sound.

Each lesson, work through all four steps to give the child practice hearing the sounds and matching the sounds (with and without the hand cues) with the letters.

**General Tips:**

- Lay out Sign Sounds™ photo cards with short vowels in the top row. Short vowel photo cards should always be laid out in this order: a, e, i, o, u. Other vowels and diphthongs can be placed below the short vowels. Consonants can be placed below the other vowels and diphthongs.
- For children confusing voiced and voiceless consonants, it helps to place all the voiceless consonants on the left side and all voiced consonants on the right side. In addition, it helps to place consonant pairs together such as p-b, t-d, k-g, s-z, f-v, sh-zh, ch-j. See chapter one for details about voiced vs. voiceless consonants.

## Sound Segmenting and Blending

### Picture – Word Match

Goal: To sound out printed words, blend the sounds together to make a word, and then match the word with a picture.

Procedure:

- Provide a page with pictures or photos of short familiar, three sound words.
- Provide separate cards with the printed word.
- Give the child a printed card, have him/her sound out the letters and blend the sounds together to form a word.
- If the child has difficulty, cue the sound with the PT&S hand cue.
- The child should then match the printed word with the picture.

Extension Activity:

Sounding out and blending 4- and 5-sound words such as flag, send, trip.



cat



hat



hen



bag



bus



dog

## Sound Segmenting and Blending with Word Families

### Family Fun

**Goal:** To sound out the first sound in a word (the onset) and blend it with the rime in a word family; the rime being read as a whole.

**Procedure:**

- Assemble objects, photos or pictures in a word family. Choose high frequency word families (Fry, E., Kress, J. and Fountoukidis, 2000, p. 41) such as:
  - at cat bat rat mat sat pat fat
  - an man ban fan can tan ran Dan
  - ap cap map tap clap trap
  - ag bag rag wag sag tag flag
  - ack back rack sack Jack crack black
  - ed red fed bed led Ted
  - ell bell fell well sell tell yell
  - est best west nest rest pest test
  - in pin tin win fin chin thin
  - ip hip sip dip tip ship skip
  - ick sick Dick pick chick quick
  - ot hot pot rot not dot got
  - op mop cop hop top pop stop
  - ob cob job rob mob sob Bob
  - ug bug hug rug dug tug snug
  - um gum hum bum drum plum
  - uck duck luck buck suck truck stuck
- Print the rime on a card and say the rime (eg. 'at') with the Sign Sounds™ hand cue for /a/.
- Print single letters on separate cards. Choose letters for which the child already knows the *sounds*, and letters that blend with the rime to make words.
- Have each child choose a single letter out of a box, say the single letter *sound* + hand cue, put the letter with the rime, and blend the sound with the rime to make a word.

## Study Questions Chapter 4

1. An alphabetic language uses symbols (letters) to represent \_\_\_\_\_

2. According to Rhea Paul, why doesn't reading come naturally to everyone who tries to read using an alphabetic language?

\_\_\_\_\_

3. Define logographic reading.

\_\_\_\_\_

4. What is a major limitation of learning to read only by sight words?

\_\_\_\_\_

\_\_\_\_\_

5. Phonics is like what part of a tree? \_\_\_\_\_

6. Define phonics.

\_\_\_\_\_

7. Why are Sign Sounds™ hand cues an excellent tool to teach phonics?

\_\_\_\_\_

8. Describe at least two ways you can use the Sign Sounds™ hand cue photo cards in activities to develop phonics skills:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Notes



# Chapter 5

## Spelling

Spelling is a complex activity that requires significant knowledge about words — the sounds and order of sounds in words, how sounds match with letters, what letter positions and combinations are acceptable, how word meaning affects letter choice, and how the printed word *looks*. It is now understood that these skills are acquired as spelling develops through a series of stages.

### Spelling Development

Spelling development is characterized as moving through a number of stages. (Masterson and Crede, 1999, p. 243-4) Passage through the stages coincides with acquisition of specific skills or knowledge about how to spell words. Spellers need to learn:

Although it's easy to find exceptions to spelling rules, spelling rules are helpful and as Adams-Gordon (2003, p. 24) indicates "there are 46 rules and linguistic principles which have few or no exceptions and apply to the largest number of high frequency words".

- words can be represented by print
- words are made up of sounds
- sounds are represented by letters
- conventional patterns for representing sounds
- the meaning of words affects spelling
- visual orthographic image (VOI) - how words look

### Phonological Awareness and Spelling

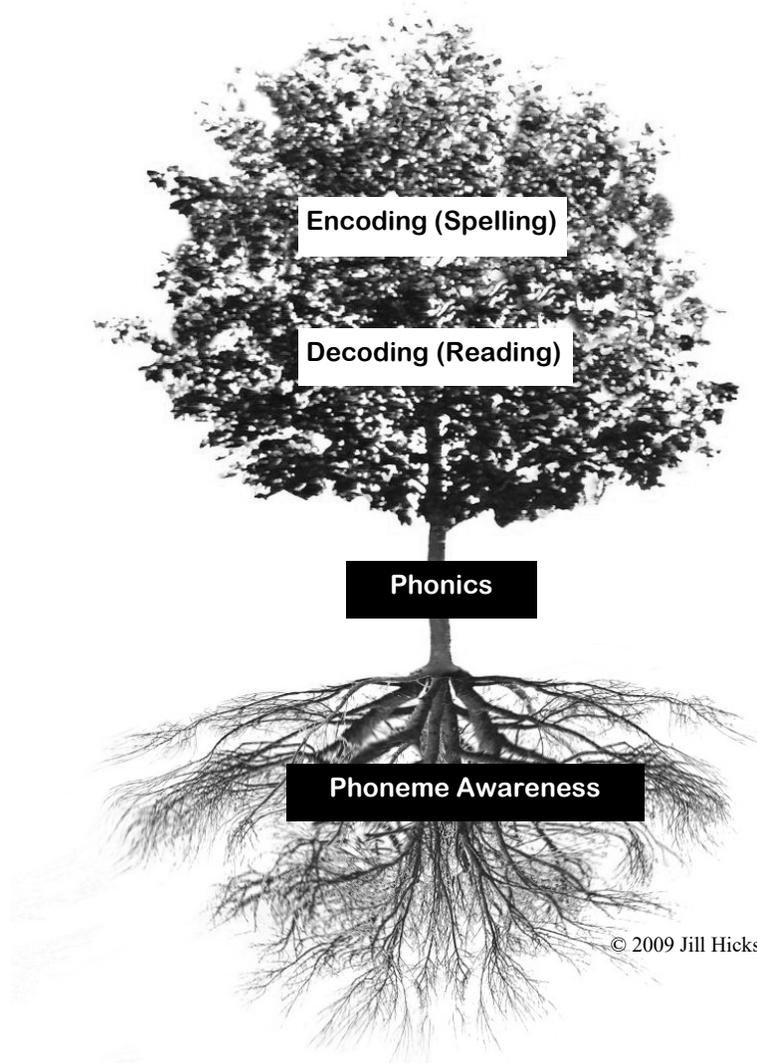
Like reading, spelling in English is based on sounds, so the student must learn that words are made up of sounds. Gail Gillon (2004, p. 13) states:

*"The importance of phonological awareness to spelling development is also being recognized. Spelling is no longer considered an exercise in visual memorization."*

*Rather, spelling is now viewed as a language-based skill, in which knowledge of the sound structure of spoken language is an important component.”*

Spellers use information about sounds in words so they need to accurately hear the individual sounds in words, and decipher the number and order of sounds.

## The Down Syndrome Junction™ Literacy Tree



Sign Sounds™ is an excellent way to develop the foundational skills necessary for successful literacy learning.

“Frith (1985) has proposed three phases of literacy development: logographic, alphabetic and orthographic.... Spelling ability is rudimentary at this (logographic) stage, consisting primarily of words learned by heart and recalled as a collection of arbitrary shapes....the alphabetic stage is marked by the realization that a particular speech sound can be represented by a specific letter...It is not until the commencement of the orthographic phase, that the reader becomes conscious of other equally important features which are represented by the English spelling system.” (Snowling and Stackhouse, 1996, p. 78-9)

“Learners begin with the expectation that spelling represents sound and grow toward the understanding that spelling also represents meaning.” (ASHA Leader Online, 2002, p. 3)

### Letters Represent Phonemes

It is not enough just to know the sounds in a word, but one must also know what letters represent the phonemes. With spelling, our starting point is the whole word, which then needs to be segmented into individual sounds, and each sound assigned a letter (or letter combination). Spelling, like reading, requires the use of strings of letters to represent phonemes. So it makes sense that teaching phonics will help students not only *decode* print but also *encode* print. This is what the National Reading Panel (2000) found:

*“The ability to read and spell words was enhanced in kindergartners who received systematic beginning phonics instruction. First graders who were taught phonics systematically were better able to decode and spell, and they showed significant improvement in their ability to comprehend text. Older children receiving phonics instruction were better able to decode and spell words and to read text orally...”*

### Orthographic Knowledge

Orthographic knowledge means the speller knows about conventions for linking sounds with letters. For example, knowing that the long ‘ee’ sound can be spelled ‘ea’ but not ‘ae’ is knowledge about a spelling convention. Knowing how to use ‘silent e’ to represent a long vowel, and knowing ‘ck’ is never used to represent an initial /k/ sound show knowledge of orthographic principles.

### Derivational Morphology

Students learn that some spellings are linked to meaning. For example, the past tense is represented by different *sounds* in ‘hopped’ /t/, ‘hugged’ /d/, and ‘wanted’ /ed/. However all three words *spell* the past tense marker with the letters ‘ed’.

### Visual memory

As students gain experience with print through reading and spelling, they learn how a word should *look*. They learn that certain words or parts of words look a certain way. This has been called forming a visual orthographic image (VOI) which can serve as a template for spelling new words (Masterson and Crede, 1999, p. 244.; Apel and Masterson, 2001, p. 184).

## Printing

### Spelling and Printing

When we think about spelling we automatically think about printing as the way we communicate spelling. Although printing is often the mechanism we use to show spelling, it is by no means the only way. There are many tools we can use to formulate the letters for spelling — for example, keyboarding, oral spelling, using pen and paper, and using a movable alphabet.

### Movable alphabet

It is possible to spell before (or in absence of) the fine motor control needed for printing. With young children I suggest using a ‘movable alphabet’, a Montessori strategy. A movable alphabet allows a child to make words with letters without the burden of knowing how to form the letters and control the writing instrument. We can progress from using a movable alphabet to printing. Please see the activity section of this chapter to see an example of the Sign Sounds™ Magnetic Letters under the Letter-Sound Match activity.

### Printing

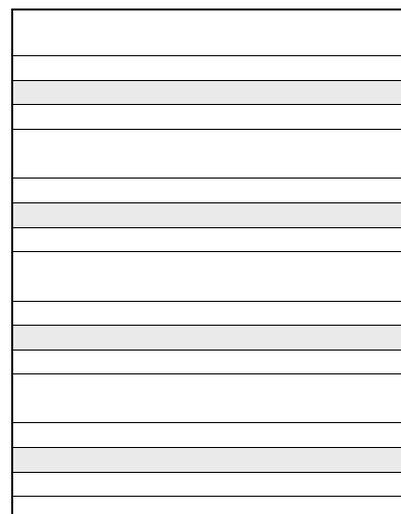
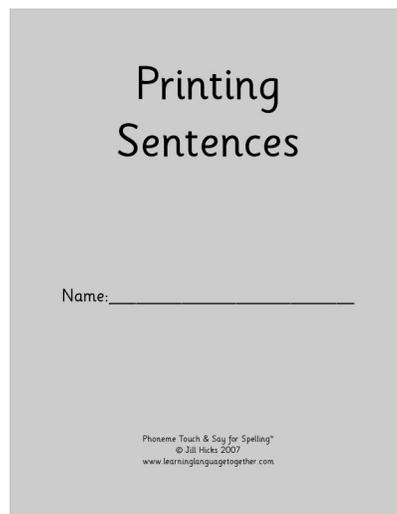
Printing, forming the letters, is a skill in itself. In order to be able to print one must have 1) the fine motor control to hold the pencil while making controlled movements with the writing instrument, and 2) one must know how to form the letters. These are really two separate skills. It is suggested that each skill be developed separately and then the two skills can be joined for printing.

To develop fine motor control we need to teach children how to hold a writing instrument (pencil, crayon, marker, etc.) using a proper tripod grip. Pencil grips such as the stetro pencil grip help position the index and middle fingers and thumb correctly on the pencil. There are also three-sided pencils available. Practice drawing straight and curved lines, and colouring help develop fine motor control independently of letter formation.

To learn letter formation, a child can practice the sequence of movement for the letter by tracing a large ‘sandpaper’ letter, or by tracing the letter in a textured surface such as a sand tray or shaving cream. An adult should model the letter formation (starting point and direction of movement) for the child to copy.

Once a child has developed fine motor control and knowledge of how to form a letter or letters, it is time to combine the two skills into printing. Use of lined paper to guide beginning printers to differentiate ‘tall, medium, and basement’ letters gives children a mnemonic regarding relative letter size.

The Down Syndrome Junction™ Printing Sentences and My Journal spiral notebooks provide special lined paper to guide letter height.



### A Question of Font

Some fonts are easier to read than others. The Sassoon Primary Infant Font was developed by Dr. Rosemary Sassoon of the U.K. She found this was the easiest font for young children to read. I recommend using the Sassoon font for beginning reading, and for printing/spelling. One of the important differences between the Sassoon font and a ball and stick font is that the Sassoon font has tag ends. Learning to print a font with tag ends makes sense because it teaches the student a system they can continue to use when they start cursive writing. The Sassoon Joiner font is the font that joins the letters for cursive writing.

Compare the fonts below:

Arial Font

b d

p q

Sassoon Primary Infant Font

b d

p q

The tag ends on the Sassoon font differentiate otherwise mirror image letters. When children are taught letter formation that keeps the pencil on the paper throughout the letter, and has ‘**b**’ beginning with a “bar” (line), then circle, but ‘**d**’ beginning with the circle, then the line *with a tag end*, they form different motor patterns for these two letters which helps the letters to be stored separately in memory.

Keeping the pencil on the page throughout letter formation (instead of making separate starts for a line and then a circle) simplifies the task and makes the transition to cursive writing easier.

All Down Syndrome Junction™ materials for the child/student use the Sassoon Primary Infant font.

“In the initial stages of learning to write, children should be encouraged to trace over or to copy from a model. They should not be expected to copy from a distance, for example, from a white board. Letters which end on the base line should be taught from the beginning with an exit stroke to facilitate the natural progression to a joined script. It is important, even at this early stage, to make the child aware of the relative height of letters and that they should be correctly positioned...” (Snowling and Stackhouse, 1996, p. 200)

## Using Sign Sounds™ to Teach Spelling

Sign Sounds™ is a powerful tool to teach spelling. Sign Sounds hand cues highlight sounds to help listeners identify individual sounds, thus developing the important skill of phoneme awareness. The phonemes are then systematically linked with graphemes (letters).

Sign Sounds™ hand cues are visual and tactile-kinesthetic. They add important extra information to the sounds allowing for multisensory learning. Adams-Gordon (2003, p. 23) states:

*“Poor spellers tend to have poor visual recall. They learn best through other sensory input. Some learn best through auditory impressions. They depend on remembering the sounds of the letters being recited in order. Still others learn well by recalling physical or tactile impressions.”*

Using the Sign Sounds™ hand cues to teach spelling builds on the child’s knowledge of sounds and hand cues used to teach reading. The Sign Sounds hand cues become a key to unlocking the mystery of spelling because the hand cues provide a stable representation of the sound. Even though a sound may be spelled numerous ways, the *hand cue always remains the same for any given sound*. So the student can feel confident in hearing the sounds in a word.

## **Sign Sounds Reading & Spelling™**

Sign Sounds Reading & Spelling™ (available at [www.downsyndromejunction.com](http://www.downsyndromejunction.com)) makes spelling accessible because it breaks spelling down into subsets of skills, and uses visual support to give explicit information about sounds and letters. There are no lengthy rules to memorize, rather students progress through three levels, building upon foundational literacy skills.

### **Level One — Sounds and Letters:**

The student is taught to hear sounds in words, and to match sounds + hand cues with letters.

### **Level Two — CVC Words:**

Students learn how to represent CVC (consonant-vowel-consonant) words with letters.

### **Level Three — Spelling Choices:**

Students learn to identify the sounds in words and progress through graduated Word Lists that show the various ways to spell each phoneme. For example, that the sound /ee/ can be spelled “ee” (see), “ea” (eat), “e” (me), and “y” (baby). Students practice spelling words on corresponding Spelling Sheets, simply visually organized to show the different ways to spell each sound. These Sign Sounds Reading & Spelling™ Word Lists and Spelling Sheets are the key to making spelling choices simple, accessible, and easy to learn, using a multisensory framework that makes sense.

## Sound-Letter Matching

### Photo Card Sound ID

**Goal:** To match sounds and hand cues with the letters that represent the sounds.

**Procedure:**

- Say a sound and its matching Sign Sounds™ hand cue. Then show the Sign Sounds™ photo card for the sound.
- For children just learning sound-letter correspondence, start with easy consonant sounds such as /p, b, t, d, k, g, m, n, s, z, f, v/ and short vowel sounds /a, e, i, o, u/.
- Once you have introduced 2 or more photo cards lay them out on the table in front of the child. Go through the following sequence:
  1. **Receptive With Hand Cue:** Adult says the sound with the hand cue and the child points to the matching photo card.
  2. **Expressive With Hand Cue:** Adult points to a photo card, and the child says the sound with the hand cue.
  3. **Receptive Without Hand Cue:** Adult says a sound and child points to the matching photo card.
  4. **Expressive Without Hand Cue:** Adult points to a photo card and child says the sound.

Each lesson, work through all four steps to give the child practice hearing the sounds and matching the sounds (with and without the hand cues) with the letters.

**Extension Activity:**

Do all four steps as listed above but instead of using the Sign Sounds™ photo cards, use just the letters printed on a page. (Keep the short vowels in the top row in this order: a, e, i, o, u.)

**General Tips:**

- Lay out Sign Sounds™ photo cards with short vowels in the top row. Other vowels and diphthongs can be placed below the short vowels. Consonants can be placed below the other vowels and diphthongs.
- For children confusing voiced and voiceless consonants, it helps to place all the voiceless consonants on the left side and all voiced consonants on the right side. In addition, it helps to place consonant pairs together such as p-b, t-d, k-g, s-z, f-v, sh-zh, ch-j. See chapter one for details about voiced vs. voiceless consonants.

## Photo Card Sound ID



You can begin playing Photo Card Sound ID with just two Sign Sounds hand cue photo cards.

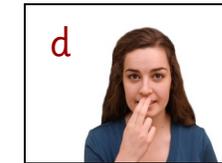
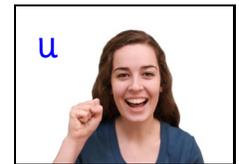


Photo Card Sound ID is a fun activity in which the Sign Sounds hand cue photo cards are laid out on the table. Photo Card Sound ID is an excellent way to practice identifying spoken sounds and matching them with letters. The Sign Sounds hand cues add important visual information to help with the identification, storage, and recall of phonemes and their corresponding letters.

You can begin playing Photo Card Sound ID with just two cards, or build up to using numerous cards as shown above. Continue to add more cards as the student(s) learn more sound + hand cue — letter matches.

## Sound-Letter Production

### Letter-Sound Match

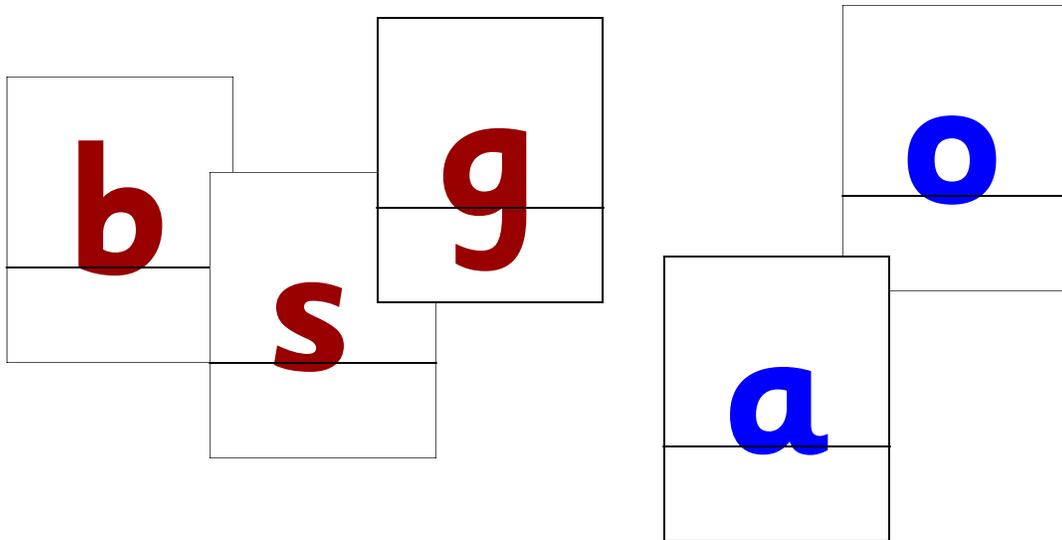
**Goal:** To know the letter (or letter combination) that represents individual consonant and vowel sounds.

**Procedure:**

- Use the Sign Sounds™ Magnetic Letters movable alphabet (in Sassoon font).
- Start with easy consonant sounds such as /m, p, b, t, d, c, g, w, n, s, z/ and short vowel sounds /a, e, i, o, u/.
- Say a sound + hand cue and show the letter that matches. Do this for two or more letters.
- Select a few Sign Sounds™ Magnetic Letters and place on your magnetic board. Say the sound + hand cue for one of the letters, and have the child find the corresponding letter.
- Have the child say a sound + hand cue and you choose the corresponding letter.
- Then have the child say a sound + hand cue and choose the letter himself.

**Extension Activity**

- Say a two- or three-sound phonetic word and choose the letters that correspond with each sound.



## Sound-Letter Production

### Sign Sounds™ Reading & Spelling™

Goal: To hear the sounds in a word and show how the sounds are represented with letters.

Procedure:

- Introduce the *Sign Sounds Reading & Spelling™* Word Lists for the sounds you are teaching.
- Say the sound + hand cue as you point to the various spellings listed at the top of each column.
- Use the hand cue when you read aloud each word to show that the *sound* is the same but the *spelling* may be different.
- Take the Word Lists away and present one of the words orally.
- The student should say the sound + hand cue first, then find the corresponding Spelling Sheet and point to the column where the word should be spelled.
- The student should then print the word in the correct column, listening for all the sounds in the word.
- Practice explicit error correction. So for example, if the student points to the wrong column, direct him to the correct column for printing the word.

ee	ea	e	y
see	eat	be	baby
feet	each	he	Amy
feed	tea	me	Mommy
need	teach	she	Daddy
seed	peach	we	happy
tree	beat	being	funny
week	neat	begun	lucky
keep	seat	maybe	body
sleep	leaf	zebra	city
teeth	clean	even	sticky



Phoneme Touch & Say for Spelling™ Word List  
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[www.learninglanguagestogether.com](http://www.learninglanguagestogether.com)

## Study Questions Chapter 5

1. Write true or false after each of the following statements:
  - Spelling is primarily an exercise in visual memorization \_\_\_\_\_
  - Spelling is a language-based skill \_\_\_\_\_
  - Knowledge of the sound structure of spoken language is important in spelling \_\_\_\_\_

2. How can a child spell without/before the fine motor control needed for printing?  
\_\_\_\_\_

3. Printing can be broken down into two main skill areas which are:  
\_\_\_\_\_

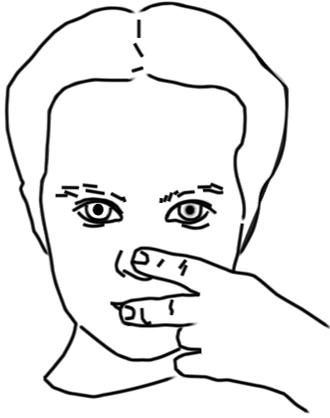
4. What font has tag ends (an exit stroke) and is used in all Down Syndrome Junction™ materials children use?  
\_\_\_\_\_

5. Explain how Photo Card Sound ID helps children learn to match sounds and letters.  
\_\_\_\_\_  
\_\_\_\_\_

6. What are the 3 levels in the Sign Sounds Reading & Spelling™ program ? \_\_\_\_\_  
\_\_\_\_\_

7. Explain how the Sign Sounds Reading & Spelling™ program teaches the different ways to spell a sound.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Notes



# Chapter 6

## Language

Sounds, words, language, communication are an integral part of our lives. Language is fundamental to human existence as evidenced by the fact that every culture has language that allows individuals to communicate. Language is complex, encompassing social interaction, thought, and memory. In this chapter, we will look at how language develops in infancy and childhood, and how language affects cognition and social interaction. We will pay special attention to the critical role of vocabulary development and how vocabulary learning is tied to speech sounds.

### Sounds And Words Are Intimately Related

#### Babble

When babies coo and babble they are playing with sounds. Babbling is important for several reasons: it shows the infant's interest in connecting with others, builds turn-taking skills, and gives practice hearing and saying sounds and sound sequences. Babbling is more than playing though as it lays the foundation for real words as described by Sue Buckley and Gillian Bird (2001, p.20):

“Studies of typically developing children have shown that first words are phonologically similar to babble. For example, the distribution of consonants and the syllable structure of first words are identical to that of babble.”

(Storkel and Morrisette, 2002, p. 24)

*“Babble is important and sets the stage for later speech development. Babies practice speech sounds in their babble and they tune their babble to the particular sounds of the language that they are hearing by twelve months of age.”*

## First Words

When does babble become a word? A string of sounds graduates to a first word when the child uses the same group of sounds consistently to represent an idea. So if ‘buh-buh’ is used consistently to mean ‘bye-bye’ then it is a word. If ‘mama’ is used consistently to mean ‘Mommy’ then it is a word.

## The Importance of Vocabulary Development

The sum of our internal dictionary of words is called our *lexicon* or what is commonly known as a person’s vocabulary. A child builds a store of single words (lexicon) before combining words (syntax). Individual words are a foundational skill a child must learn before he starts combining words to elaborate meaning. Sue Buckley (2000, p. 7) describes the important role of vocabulary development throughout childhood:

*“Once they can say 50 to 100 words, toddlers start joining two words together. Once they can say 250-300 words, they begin to learn grammar and to use plurals, correct tenses and longer sentences. At 5 years of age, the average child’s vocabulary is more than 2,000 words. It is important to remember that vocabulary learning then continues throughout childhood and that it accelerates during the school years.”*

“To acquire the native language, a child must do two things: Learn the words of the language and extract the relevant phonological characteristics of those words.”  
(Storkel and Morrisette, 2002, p. 24)

## Phonology-Lexicon Link

The acquisition of vocabulary is related to speech-sound (phonological) development. There is a bidirectional link between sounds and lexicon (vocabulary). The sounds we know influence what words we will recognize and say. The words we know influence what sounds we will be able to recognize and say. Storkel and Morrisette (2002, p. 24) describe the phonology-morphology link this way:

*“This association between lexical and phonological*

“In particular, the relationship [between lexicon and phonology] in preschool and school-age children appeared to be bidirectional in nature, with the lexicon influencing phonological acquisition and phonology influencing lexical acquisition.”

(Storkel and Morrisette, 2002, p. 34)

*development is observed in children with precocious language development as well as in children with delayed language development. In particular, children who know many words tend to produce a greater variety of sounds and sound combinations, whereas children who know few words tend to produce a limited variety of sounds and sound combinations. ... This is suggestive of an intimate connection between word learning and productive phonology.”*

The more tuned in to sounds a child is, the easier it will be to learn words. *Sounds are a primary and important component of vocabulary acquisition.*

### The Language-Cognition Link

Language and cognition develop together. Sue Buckley (2000, p. 2) describes the role of language in cognitive development:

“Perhaps more than any other developmental achievement, word-learning stands at the very intersection of language and cognition, and serves as the gateway to subsequent development in both domains.”

(Waxman, 2002, p. 103)

*“It is important to note that word learning begins in the first year of life and continues to old age. Words are knowledge. Each new word learned is a concept learned and the rate at which words are learned reflects the rate at which we are gaining knowledge about our world. As language skills develop, words become a tool for thinking. Once children begin to string words together, words take over as the most powerful way to think and reason and remember — we do these things most often as silent speech in our heads.”*

### Phonology-Morphology Link

We can define phonology as the system of phonemes (speech sounds) of a language. When we describe language in terms of the units of *meaning* in a language we are studying morphology. Linguists identify the smallest units of meaning as *morphemes*. Free morphemes are stand-alone words like ‘cat, table, loyal, rapid’. Bound morphemes are

meaningful word parts that must be attached to a free morpheme. Prefixes (un-, dis-, in-), and suffixes (-s, -ing, -ness) are bound morphemes.

We can think of morphemes as being the grammar of the language. Morphemes carry meaning. This meaning is transmitted by one or more phonemes. For example, in English, we show regular past tense by adding the sounds /t, d/ or /id/ to the end of the verb. The verb jumpeded has a /t/ sound, waved has a /d/ sound, and wanted has an /id/ sound. It is the sound /t, d, id/ that shows the action has already happened. Individuals need to be able to say these sounds and then use them on the end of the verb to show past tense. Many subtleties of meaning are expressed through the addition of one or more phonemes to a word. Plural is indicated with a /s, z/ or /ez/ sound as shown in these words: cats, dogs, houses. Present continuous tense is indicated with a /s/ or /z/ as we see in: walks, runs.

Use of morphology (grammar) allows us to communicate more precisely. The ability to say individual sounds (or at least indicate a particular phoneme with a hand cue) and know when to use those sounds to convey meaning is an important part of successful communication. Phonology (sounds) allows us to express morphology (meaning).

### Syntax

Another aspect of grammar is sentence structure, or syntax. Word order influences meaning. “Is the ball red?” has a different meaning than “The ball is red.” As a children’s language develops they learn to say longer and more complex sentences. Children learn the ways words can be ordered in a sentence and the different meanings associated with different word order. Some syntactic conventions develop later such as passive sentences as in, “The boy pushed the dog.” versus “The boy was pushed by the dog.”

### Phonological Loop

Short term memory has been hypothesized to be a working memory in which 5-9 items can be held. Items are transferred to long term memory

(or lost) when they leave short term memory after two seconds. Baddeley proposed a model for short term memory that includes a visuo-spatial sketch pad, a central executive, and a phonological loop. Wadsworth (2005, p. 1) describes the phonological loop as follows:

*“The phonological loop has two parts: the phonological store and the articulatory control process. The phonological store is a memory store that can retain speech-based (phonological) information for a short period of time. Unless rehearsed, the traces within the store are assumed to fade and decay within about 2 seconds, after which they are no longer usable. The second component is the articulatory control process, which is responsible for two different functions: it translates visual information into speech-based code and deposits it in the phonological store; and it refreshes a trace in the phonological store, offsetting the decay process”.*

*Language we hear (or read) is translated into phonemes which are rehearsed in short-term memory before being transferred to long term memory.*

### Language Depends on Speech Sound Knowledge

Language is a complex activity that helps us to think and learn about our world, and communicate with one another. We have seen the *primacy and importance of speech sounds in both spoken and written language* development. The recognition and use of speech sounds is crucial for the development of vocabulary, grammar, reading and spelling. We need to do all we can to help children learn about speech sounds to facilitate the development of vocabulary, memory, cognitive and literacy skills.

## Sign Sounds™ to Develop Language

Sign Sounds™ is successful because it directly highlights speech sounds, giving additional visual and tactile-kinesthetic information about phonemes, the basic elements of words. We can use Sign Sounds hand cues to develop both vocabulary and grammar.

### Developing Vocabulary

When Sign Sounds™ hand cues are used to identify the initial sound of a word — used simultaneously with the spoken word — the hand cue becomes a symbolic representation of a group of words beginning with that sound. PTS hand cues can be used both receptively (the hand cue is seen and processed to help decode a word) and expressively (the hand cue is used when sending a message to help encode the word). By cueing into the first sound of the word, users develop an awareness about phonemes which will help them identify that particular word but will also help them build other vocabulary and phonological awareness, and hence develop language skills and literacy.

### Developing Grammar

Part of what we consider ‘grammar’ is the use of bound morphemes to refine meaning. Some examples of sounds that are bound morphemes are:

- /s, z, əz/ to mark regular plurals
- /t, d/ to mark regular past tense
- /s, z, əz/ to mark possession
- /s, z, əz/ to mark third person present
- /ɪŋ/ to mark present progressive tense

We can use Sign Sounds™ hand cues to highlight these grammatical structures both receptively and expressively. For example if a child is omitting plural /s/, we can model addition of the /s/ morpheme by saying “Cats” while simultaneously making the hand cue for /s/ when the /s/ sound is said. This adds considerable weight to the sound /s/

which is fleeting and because of its auditory properties may be difficult to hear. The child will see the hand cue and the hand cue can be held longer than the sound to emphasize the sound.

Similarly, the child can be encouraged to use the hand cue to a) remind him to put a /s/ on the end of nouns to show more than one, and b) to cue correct articulation of /s/.

In addition to developing morphology, Sign Sounds™ can be used to develop syntax (sentence structure). Sign Sounds hand cues for beginning sounds in words can show missing words in sentences such as pronouns or auxiliary verbs. A common application for this is when teaching present progressive tense. The Sign Sounds hand cue can be used to highlight the pronoun (I, you, he, she, they) and the auxiliary verb (am, is, are) in sentences such as “I am eating.” “He is reading.” “They are singing.”

PTS hand cues can also be used to show the order of words in a sentence. Some question forms require interrogative reversal changing “I can play.” to “Can I play?” By using the PTS hand cue for the beginning sound of each word, the word order becomes more obvious.

### Sign Sounds™ to Develop Language

Sign Sounds™ hand cues are a versatile tool which can be used to develop vocabulary and grammar. By highlighting one or more sounds in a word, phonological skills are developed, which facilitates further vocabulary development. Sign Sounds hand cues can also be used to highlight grammatical markers such as past tense and plurals, and thus develop morphology. Finally, Sign Sounds hand cues can be used to show missing words and word order in sentences and thus develop syntax.

## Vocabulary Development

### Word Cues

Goal: To help children learn to say words to communicate about things/people in their environment, and to communicate feelings, requests, and dislikes.

Procedure:

- Observe your child and record what words he/she says. Count as a word any vocalization that is consistent and resembles a word even if it's not pronounced correctly. For example, if the child consistently says /ga/ for 'cat', then count it as a word.
- Observe when your child becomes frustrated by an inability to communicate, and what he/she is most interested in, and what his/her wants and likes are.
- Make up a list of words that would be highly useful to your child. The list should include names of people, and familiar or favorite objects. Other useful words are 'no', 'help', 'more', and feeling words such as 'happy, sad'.
- Begin with 1 to 4 target words. Use the word all by itself repeatedly in context. Say the word with emphasis and use the Sign Sounds™ hand cue for the beginning sound of the word. For example, if the child wants more Cheerios, model the word 'more' with the /m/ hand cue before giving a cheerio. Help your child make the /m/ hand cue to show 'more'.
- When your child is familiar with a sound/hand cue for a word, model the word in context, and then pause to see if the child will attempt to say the word, sound or use the hand cue. If he/she does any of these things, immediately give him/her what he/she wants. For example, if your child's favorite toy is a doll, you should model 'doll' with the /d/ hand cue before giving your child the doll, then pause. If your child says /d, do/, or uses the /d/ hand cue, immediately give her the doll.
- Reinforce any attempts to communicate by saying the word, the first sound of the word and/or using the hand cue.
- Add new target words when your child has learned previous target words.

Extension Activity

- Include action words (verbs) such as 'go, eat, sleep, walk', and place words (prepositions) such as 'on, in, under'.
- Use Sign Sounds™ hand cues to cue words in real life situations. For example, if a child forgets to say 'Mrs.' you can use with an /m/ hand cue in context to help the child remember to say 'Mrs.' before the last name.

## Morphology

### Regular Plurals

Goal: For the child to add an /s/ or /z/ to the end of words to show plurality.

Procedure:

- Assemble objects, pictures or photos of objects that end with one or more of these voiceless consonants: /p, t, k/ (words ending in these sounds use /s/ to show plurals.)
- Go through the singular nouns first. Say each noun highlighting the last sound with a PTS hand cue, and put each card on a pile on the left side of the table.
- Then go through the plural nouns. Say each noun with a /s/ on the end to show plurality. Stress the /s/ sound and use the Sign Sounds™ hand cue to show the /s/. Put these pictures on a pile on the right of the singular nouns pile.
- Gather up the pictures and have the child sort them into singular and plural piles, saying the noun without /s/ for singular and the noun with /s/ for plural.
- If the child has trouble remembering to put the /s/ on for the plural, cue the /s/ with the hand cue right before the child finishes saying the word.
- Encourage the child to use the /s/ hand cue to show plurality, but drop out his/her use of the /s/ hand cue once the child remembers to say plural /s/ without the hand cue.
- Once the child uses /s/ plural in this activity, go through the same stages with the /z/ plural as follows.
- Assemble objects, pictures or photos of objects that end with one of these voiced consonants: /b, d, g, l, m, n, r, v/ (words ending in these sounds use /z/ to show regular plurals.)
- Sort the pictures into singular and plural piles, making sure to stress the /z/ sound with the hand cue when you say the plural /z/. Continue as for the /s/ plural activity.

## Syntax

### Present Progressive Tense

Goal: To help children learn to use the auxiliary verbs (am, is, are) in sentences using the present progressive tense. Examples are: “I am eating. He is singing. They are walking.”

Procedure:

To teach “I am (verb)ing.”

- Take photos of the child by him/herself doing various things.
- Assemble the photos and say a sentence about each photo as you present it. Say the sentence from the child’s perspective. For example, “I am reading. I am sleeping. I am playing. I am running.” Use the Sign Sounds hand cue for /a/ to highlight the ‘am’ word. The child should repeat each sentence after you. Help him/her remember to say the ‘am’ by cueing with the /a/ hand cue.
- Then let the child say the sentence for each picture. Make sure he/she says the whole sentence using ‘I’ and ‘am’. If necessary, cue the child to remember the ‘am’ with the /a/ hand cue.

To teach “He is (verb)ing.” and “She is (verb)ing.”

- Take photos of individuals alone doing something. Use both males and females. You can also use pictures (instead of photos) of a boy or girl doing something.
- As you present each photo or picture, model the complete sentence “He is running. She is jumping.” Cue the use of ‘is’ with the /i/ hand cue.
- Continue with this activity as you did with the “I am (verb)ing.” activity.

To teach “They are (verb)ing.”

- Take photos or find pictures of children doing various actions. The child or children you are working with should not be in the photos.
- Model sentences using ‘are’ such as “They are eating”. Cue the ‘are’ with the /ar/ hand cue.
- Continue with this activity as you did with the “I am (verb)ing.” activity.

Extension Activity

- Look for instances during daily life when you can model use of present progressive sentences. For example if you’re at the park you could say “Look at that boy. He is climbing.” Use the /i/ hand cue to emphasize use of the ‘is’.
- You can also teach contracted forms of the auxiliary verbs: ‘m, ‘s, ‘re as in “I’m hopping. She’s swinging. They’re riding.” You can use the hand cues to cue the /m/ sound for ‘m, the /z/ sound for ‘s, and the /er/ sound for ‘re.

## Morphology

### Regular Past Tense

Goal: For the child to add an /t or /d/ to the end of words to show ‘ed’ past tense.

Procedure:

- Assemble pictures or photos of people doing various things (verb pictures).
- Find verbs that end in one of these voiceless sounds: /p, t, k, s, f, sh/ *and* that used ‘ed’ for past tense. These verbs use the /t/ sound for the ‘ed’ past tense. Examples are ‘hopped, walked, kicked, bounced, puffed, washed’
- For each picture, say a present progressive sentence and a past tense sentence.
- Introduce each sentence with ‘Today’ or ‘Yesterday’. For example, “Today he is hopping. Yesterday he hopped.” Stress the /t/ sound and use the /t/ hand cue when you say the ‘ed’ past tense.
- Have the child imitate your sentences. Cue him to add the /t/ sound for the ‘yesterday’ sentence.
- After imitating your sentences, see if the child can say the sentences on his own. Cue the /t/ sound for past tense with the /t/ hand cue if needed.
- Once the child has success adding /t/ for past tense, do the same activity for verbs that end in voiced consonant sounds *and* that use ‘ed’ for past tense. With these verbs we use the /d/ sound for the ‘ed’ past tense. Some examples are: ‘pulled, yelled, cried, delivered, bragged, robbed’.

Extension Activity

- Look for opportunities in real life situations to use past tense verbs. Stress the /t/ or /d/ past tense marker and use the hand cue to draw the child’s attention to the end sound on the verb.
- A good activity is to look through family photo albums and talk about what people did.

## Morphology

### Pronouns

Goal: For the child to use subjective pronouns correctly: I, he, she, they.

Procedure:

To teach use of the 'I' pronoun:

- Use the *I am happy* book (available from Down Syndrome Junction™) to teach the "I" pronoun. As you read each short sentence, stress the 'I' using the hand cue for /igh/.
- Have the child read the book, making sure he/she says "I" for the pronoun. Cue use of 'I' with the /igh/ hand cue if necessary.
- Assemble photos of the child and model 'I' sentences such as "I am playing. I am happy. I am jumping. I am tired." Have the child say an "I" sentence for each photo.
- Listen for the child's use of "I" in running speech. If he omits "I" or says 'me' instead of 'I', model the sentence from his/her perspective, stressing the 'I' and using the hand cue for /igh/.

To teach use of the other pronouns:

- Use the "I am happy" cards along with a photo or picture of a boy (he), girl (she), or group (they).
- Model a sentence for each photo such as "He is sad. She is tired. They are hungry." Have the child choose an emotion picture to go with the boy, girl, or group photo/picture, and say the sentence.

Extension Activity

- Look for examples in everyday life situations when you can model correct use of subjective pronouns.



Example of a photo and *I am happy* card for the sentence "She is happy".

## Study Questions Chapter 6

1. The close relationship between words and grammar is emphasized by the facts that:
  - children only start combining two words when they have a spoken vocabulary of approximately \_\_\_\_\_ words
  - children start using little grammatical markers once they can say approximately \_\_\_\_\_ words.

2. Define phonology.

---

3. Define morphology.

---

4. What is the relationship between lexicon (spoken vocabulary) and phonology (sounds)?

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5. What is the role of speech sounds (phonology) in memory?

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6. How can PTS hand cues develop language skills?

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7. Describe one activity using Sign Sounds™ hand cues to teach a language skill:

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## Notes



# Chapter 7

## Speech

We have already talked a lot about phonology — describing language in terms of the sound units of the language. We have seen how speech sounds are a critical unit for developing phonological awareness, reading, spelling, vocabulary and grammar. Phonology is important not only for language and literacy development but for communication. We make ourselves understood through speech.

### Speech Versus Language

Language is the system of symbols we use to communicate. Language can take various forms — it can be transmitted via pictures, signs, printed symbols, or the written word. But language is primarily transmitted via speech.

### Speech

Speech sounds produced for communication depend on the coordination of a variety of elements including:

- having something to say
- being able to think of the words to use
- knowing the sounds in the words and what order they occur
- adequate memory for the words and sounds to be said
- speaking on outgoing breath (respiration)
- turning the vocal cords on and off (phonation)
- moving the articulators in precise ways to make specific sounds
- adequate muscular control and coordination of the articulators

“Some children produce nearly all phonemes correctly in sentences by 2 1/2 to 3 years, whereas others continue to have a few phonetic errors at age 6.”  
(Creaghead, Newman, and Secord, 1989, p. 35)

- the ability to coordinate respiration, phonation, and articulation

Given the complexity of speech it is amazing that so many of us learn to speak with relative ease without consciously considering what we're doing.

### Speech Development

Learning to speak begins in infancy when the infant progresses from crying to babbling, to producing first words. Typically, children develop the ability to articulate the whole range of speech sounds over several years and most children will acquire speech like the adult model by seven years of age. A typical pattern of phoneme acquisition exists with some sounds being acquired earlier than other sounds, but with individual variation.

### Phonological Processes

Very young children tend to simplify their speech by applying rules we call *phonological processes*. Phonological processes are patterns of speech sound changes that generally simplify sound production. An example of a phonological process is the deletion of consonants at the end of words. This simplifies word production so for example, 'cat' becomes 'ca'. Linguists have determined that phonological processes also tend to follow a developmental pattern, with some processes being eliminated earlier than others. As the child's speech develops, phonological processes are dropped allowing for adult-like speech production.

### Delayed Speech

Given the complexity of speech it isn't surprising that many children encounter difficulties acquiring the adult speech system. The reasons for delayed speech are numerous as are the speech characteristics of those with delayed speech.

Phonemes that typically develop before age 3:

/p, m, w, h, b, t, d, n, k, g/.

Phonemes that typically don't appear before age 4:

/θ, ð, z, v, ʃ, ʒ, tʃ, dʒ/

(Craghead, Newman, and Secord, 1989, p. 49)

"Grunwell (1982) listed the following processes as being the most common in normal development: weak syllable deletion, final consonant deletion, reduplication, assimilation, cluster reduction, stopping, fronting, gliding, and context-sensitive voicing. She also proposed ages at which these processes might be expected to occur and to be eliminated."

(Craghead, Newman, and Secord, 1989, p. 57)

### Speech Processing

The path to speech is a complicated one. It helps to consider the skills involved in speech to understand at what point difficulty may arise for an individual child. Stackhouse and Wells (1997, p. 11) propose a theoretical framework to describe the speech processing system:

*“The psycholinguistic approach allows us to locate a speech processing difficulty at the level of input, representation or output. Some children may only have problems at the output side of the model. However, many children with serious and persisting speech and literacy problems will have pervasive speech processing problems affecting input, output and representations.”*

### Speech Input

The *input* level starts at the ear and includes the ability to hear adequately. The input level also involves auditory discrimination of individual sounds, and auditory processing of sounds in real words.

### Stored Information

The *lexical representation* level is a cognitive-linguistic level in which knowledge is categorized and stored as shown below:

phonological representation	= knowledge about sounds
semantic representation	= meaning
grammatical representation	= rules about using words
orthographic representation	= letter-sound knowledge
motor plan	= what sounds make a word in what order

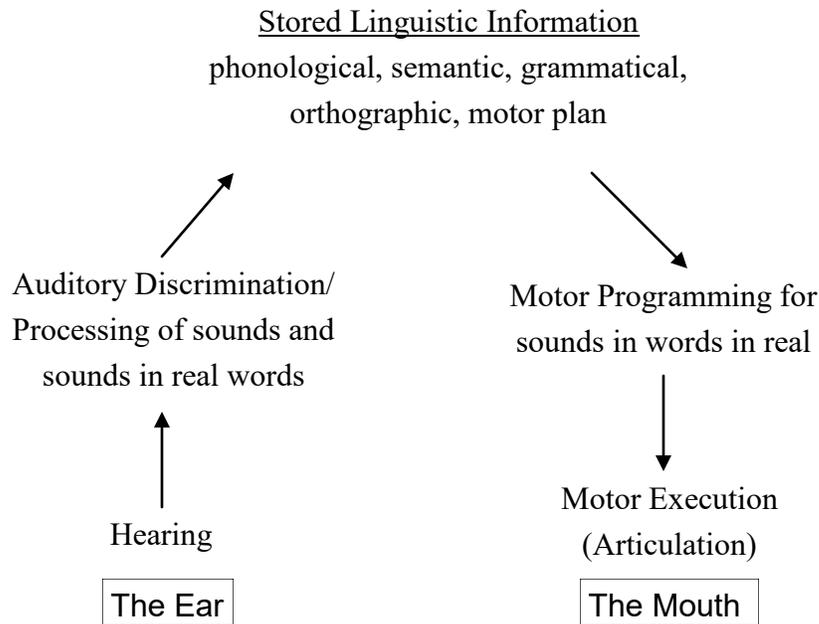
According to Stackhouse and Wells, the lexical representation includes both auditory and visual information. However, if the Sign Sounds Say™ hand cue is used, the lexical representation would also include a tactile-kinesthetic representation.

“In summary, the essence of the psycholinguistic approach is the assumption that the child receives information of different kinds (e.g. auditory, visual) about an utterance, remembers it and stores it in a variety of *lexical representations* (a means for keeping information about words) within the *lexicon* (a store of words), then selects and produces spoken and written words.”  
(Stackhouse and Wells, 1997, p. 8)

## Speech Production

The *output* level includes motor programming (organizing specific movements for words in real utterances), and motor execution (physically producing the sounds).

Speech processing as described by Stackhouse and Wells (1997), and similarly described by Dodd (2005) can be illustrated as follows:



Any difficulty on the input (left) side can affect how linguistic information is stored. For example, if a child does not adequately perceive (discriminate) sounds in words, and stores ‘pay’ and ‘bay’ both as ‘bay’, this will affect the child’s speech output as he will say ‘bay’ for ‘pay’. In the above model, we would say the phonological representation for ‘pay’ is faulty which in turn leads to a faulty motor plan telling the child what sounds are in ‘pay’ (i.e. /b/ /ay/).

Similarly, difficulty with motor programming — organizing the specific movements for each sound in order will lead to problems with sound choice and sequencing (e.g. ‘capatiller’ for ‘caterpillar’).

Difficulty with control of the organs of the vocal tract (lungs, vocal folds, palate, tongue, teeth, lips) will lead to imprecise articulation.

“Velleman and Vihman (2002) argue for a word ‘template’ that contains the phonological specifications for word production.” (Dodd, Holm, Crosbie and McCormack, 2005, p. 58)

“Motor programming refers to the mental processes that derive precise articulatory instructions for the pronunciation of a word from an abstract phonological plan. Thus, motor programming not only involves the specification of phoneme articulation but also how they are to be produced when combined in sequences (co-articulatory specifications).” (Dodd, et. al., 2005, p. 62)

“Once the articulatory programme is constructed, it is implemented by the muscles involved in articulation.” (Dodd, et. al., 2005, p. 62)

## Categorization of Speech Impairment

Speech-language pathologists typically categorize speech delay depending on where the breakdown occurs. Some children have breakdown in more than one skill.

### *Phonological Delay*

Children need to gain *phonological* knowledge about sounds — how sounds are classified and organized, and put together to convey meaning. eg. ‘bat’ means something different than ‘pat’. Faulty storage of sound information leads to what we call a “phonological speech delay” in which the child confuses which sounds to put in which words.

### *Apraxia*

Speakers need to send messages from the brain to the articulators about what sounds to make in what order. Difficulty with *motor programming* results in “developmental verbal apraxia” interrupting the message about speech sounds sent from the brain to the articulators.

### *Phonetic Delay*

Children need to learn the *phonetic* properties of phonemes — the specific motor placement and movements to produce individual speech sounds. Reduced motor execution would be considered a “phonetic speech” problem or an “articulation” delay since the child has trouble making the movements necessary for individual sounds.

## Causes of Speech Delay

Sometimes there is a physical reason that accounts for delayed speech such as hearing impairment, cognitive impairment, structural differences such as cleft palate, or motor impairment such as cerebral palsy. We call these *organic* causes of the articulation delay or disorder.

However there is often no identifiable cause for the child’s speech delay and it is considered *functional* in nature. Children who are ‘late talkers’ and those who fail to develop adult-like speech within the typical time frame often have a functional speech delay.

“The causes of developmental communication disorders are various: environmental, physiological, or psychological, although the greatest proportion of children have difficulties for which there is no known etiology.”  
(Dodd and Crosbie, 2002, p. 470)

### Severity of Speech Delay/Disorder

Speech delay can be mild as in the case of a child who misarticulates only one sound with no negative affect on intelligibility (the listener's ability to understand what is being said). A child past preschool age who has numerous misarticulations with significantly reduced intelligibility would be considered to have a severe speech delay. Speech impairment in its most severe form is seen in a non-verbal child who is unable to use speech to communicate.

### A Convergence of Skills

Learning to speak is a multi-faceted skill requiring auditory perception and processing of speech sounds, the understanding and use of rules about how speech sounds are applied in words, and the ability to make and coordinate the fine motor movements for precise speech. Not only does speech perception influence speech production, but speech production influences speech perception. The sounds children know influence the words they learn and the words they know influence the sounds they learn. All of this points to the importance of learning speech sounds well both in terms of how sounds are heard and classified, and in terms of how sounds are formed and used in words.

"The children with phonological disorders as a group clearly differ from their age peers in all three of these aspects of phonological competence: perception, production, and the inverse mapping between perception and production...These results are consistent with the view that phonological contrast is a cognitive property that emerges from the incremental acquisition of robust representations of phonological knowledge at many different levels."  
(Edwards, Fourakis, Beckman and Fox, 1999, p. 184)

## Sign Sounds™ to Develop Speech

Children develop the ability to speak like adults over several years as they hear speech models, practice making sounds, and learn the rules of how sounds combine to form words. A child's ability to perceive the differences among sounds, apply speech sound rules and produce sounds combine to influence the acquisition of adult-like speech. Sign Sounds™ hand cues are an excellent tool to help children learn these various component speech skills.

## Sign Sounds™ to Develop Auditory Perception

Since each Sign Sounds™ hand cue is unique and based on phoneme properties, the hand cues aid in the identification and discrimination of phonemes. Sign Sounds hand cues highlight individual speech sounds by providing *extra visual information* that supports the fleeting auditory signal. The hand cue can be held allowing extra time for phoneme processing and storage. The extra visual information provided by the hand cue is likely stored separately from the sound information, providing an additional memory store to facilitate phoneme recognition and production.

“... distinctive visual information ... is incorporated into the phonological representation, thereby contributing to recognition of the word.”

(Stackhouse and Wells, 1997, p. 162)

## Sign Sounds™ to Develop Speech Sound Rules

Sign Sounds™ hand cues follow definite rules. The hand cue rules help children learn speech sound rules or in other words the hand cues aid in phonological development. The Sign Sounds™ hand cues consistently highlight distinctive features of phonemes. For example, the distinctive feature ‘nasality’ is shown by the index finger touching the tip of the nose. The distinctive feature ‘stop consonant’ is shown by the hand cues bursting open. Voiceless consonants use one finger; voiced consonants use two fingers. The extra rule-based information provided by the hand cues helps in the classification of phonemes and the acquisition of speech sound rules.

### Sign Sounds™ to Develop Motor Programming

Sign Sounds™ hand cues help children see and feel which sounds are in a word, in which order. The Sign Sounds hand cues help the child organize the choice and order of sounds in a word. A child can watch another person use the Sign Sounds™ hand cues to see which sounds to make, and/or cue himself to make the sounds. The extra *tactile-kinesthetic information* provided by the hand cues gives a child with motor programming difficulties a back-up method to stimulate correct production.

### Sign Sounds™ to Develop Speech Sound Production

Sign Sounds™ hand cues stimulate correct production of individual speech sounds. The hand cues are based on place and manner of articulation, and voicing. Pushing up under the chin with a quick movement induces the back of the tongue to raise to make /k/. Encircling the lips with the fingers to highlight lip rounding and protrusion encourages the production of /ew/. In this way, as the hand cues manipulate the articulators they affect what sound will be produced.

Additionally, the hand cues add extra tactile-kinesthetic information about how the sound is made. This extra information helps form a more solid representation of the *each phoneme as a distinct entity*.

### Sign Sounds™ to Develop Speech

The visual aspect of Sign Sounds hand cues aids in auditory discrimination and processing of phonemes. Sign Sounds hand cues help develop speech sound (phonological) rules — knowing when a particular sound should be used, and help develop motor plans about what sounds are in a word. Sign Sounds hand cues give extra tactile-kinesthetic information to help children adequately carry out the motor plan during motor programming (actually saying a particular word). The movements made by Sign Sounds hand cues directly stimulate production of speech sounds (articulation) because the hand cues are based on the physical properties of phonemes such as how and where sounds are made and whether the sound is voiced or voiceless.

Talking about children with motor programming problems, Dodd (2005, p. 203) indicates “sensorimotor and tactile/kinesthetic methods are the most likely intervention programmes to facilitate change (Square, 1994).”

“If children do not develop distinct representations of items involving similar sounding segments ... then they may experience particular problems when trying to use these words in speech and spelling.” (Stackhouse and Wells, 1997, p. 31)

## Auditory Perception

### Auditory Discrimination of Phonemes

Note: Work to develop auditory perception is best done under the supervision of a speech-language pathologist. General guidelines follow.

Goal: For the child to hear the difference between individual phonemes in isolation and in words.

Procedure:

- Choose two sounds that the child does not contrast in speech. For example, if the child says ‘bat’ for both ‘bat’ and ‘pat’, the problem may be related to the child’s ability to perceive the difference between the /b/ and /p/ sounds.
- Teach the hand cues for both /b/ and /p/. Emphasize the fact that /p/ uses just one finger (and the thumb) and /b/ uses two fingers (and the thumb).
- Show the Sign Sounds™ photo card for /p/ and match it with your production of /p/ + hand cue. Do the same for /b/.
- Lay the /p/ and /b/ cards on the table. Have the child watch as you say /p/ and /b/ with the hand cue, in random order. Give the child a token to place on the corresponding photo card.
- If the child is confused about which sound you are saying, then provide numerous repetitions of just the /p/, putting a token on the /p/ photo card each time. Repeat for /b/.
- Work toward the child being able to independently identify whether you are saying /p/ or /b/.
- Once the child can hear the difference between /p/ and /b/ + hand cue produced by you, then fade out use of the hand cue so the child is forced to rely on auditory information only.

Extension Activity

- Say short words starting with /p/ and /b/ and have the child place a token on the /p/ or /b/ photo card. e.g. ‘pat, bat, pin, bin, pet, bet, push, bush’ Use the hand cue if necessary, but then fade out use of the hand cue.
- Do the above activities, but instead of using the Sign Sounds photo cards, print large lower case /p/ and /b/ letters on a magnetic white board and have the child place magnetic tokens under the correct letter.

## Speech Sound Rules

### Speech Sound Rules

Note: Work to develop speech sound rules is best done under the supervision of a speech-language pathologist. General guidelines follow.

Goal: For the child to learn specific speech sound rules. Some examples are below:

If the child uses this phonological process.

This is the rule he needs to learn.

Final consonant deletion

Words can have a final consonant

All consonants are stops

Consonants can be continuants

All consonants are voiced

Some consonants are voiceless

No consonants are made at the back  
of the mouth

/k, g, ng/ are made at the back of the  
mouth

Procedure (Using Final Consonant Deletion as an example):

- Assemble familiar objects that are short words with final consonants such as ‘boat, hat, bus, truck, ball, book, mitt, spoon, cup’ that have a variety of easy final consonants.
- Show one object at a time. Say the word by itself, slowly and clearly, stressing the final consonant sound. Use the Sign Sounds™ hand cue to emphasize the final consonant.
- Give the child the opportunity to imitate the word, using the hand cue to cue use of the final consonant.
- If the child has success with imitation, see if he can say each word on his own. Cue use of the final consonant with the hand cue.

Extension Activity

- Listen for use of final consonants in everyday speech. Model the final consonant by saying the word, stressing the final consonant, and highlighting the final consonant with the hand cue.

## Motor Programming

### Sequencing Sounds in Words

Note: Work to develop phoneme sequencing is best done under the supervision of a speech-language pathologist. General guidelines follow.

Goal: For the child to gain practice saying specific phonemes in specific patterns.

Procedure:

- Choose target sounds/words specific to the child's level of ability. For example, you may work at the phoneme level, the easy word level (such as CV, CVC or CVCV), the level of words with blends and/or multisyllabic words.
- Choose words that follow similar patterns (such as 'stop, star, stick, stash'), or that build from an easier pattern to a more difficult pattern (such as 'can-candy-candies').
- Use photos, pictures or real objects.
- Imitation: Say the target word and use the Sign Sounds™ hand cue for the target sound(s) in the word. Have the child repeat also using the hand cue(s).
- Picture Naming: Have the child say the word on his own, but you show the hand cue for the target sounds, along with the mouth movement. Say the target sound (s) if necessary. Encourage the student to use the hand cue on himself if he needs cueing to say the sounds.
- Gradually phase out your use of the hand cue but allow the student to self-cue with the hand cue if necessary.
- Work toward correct production of the target words in phrases and then sentences.

Carry-Over Activity

- Keep in mind the child's target sounds, words and/or sound sequences. Look for opportunities to use those targets in real life activities. Draw the child's attention to the targets by highlighting them with the Sign Sounds hand cues.
- Reinforce the child's attempts to produce target sounds, words and/or sound sequences during real life activities.

## Phoneme Production

### Individual Phoneme Production

Note: Work to develop individual phoneme production is best done under the supervision of a speech-language pathologist. General guidelines follow.

Goal: For the child to pronounce individual phonemes correctly.

Procedure:

- Choice of phonemes to practice is based on a number of factors including which phonemes develop earliest, which phonemes have high frequency in speech, and which phonemes are stimulable (can be made with specific instruction).
- Show the child how to make the sound, alone, with the hand cue.
- Help the child make the hand cue using hand-over-hand if necessary.
- Adult should say the sound alone, slowly and clearly, with the hand cue.
- Have the child repeat your model, using the hand cue. If this is successful then:
- Have the child say the sound on his/her own using the hand cue.
- Practice saying the sound in short familiar words (except as described next).
- For children who are used to substituting one consonant for another consonant, add a single vowel to the consonant to make a nonsense syllable. (It's often at this stage that if you say a real word, the child will automatically fall back to using the old way of making the sound which for him *is* the way to say that sound.) For example say, “/t/, /te/”. Have the child repeat.
- Continue to model syllables with the child imitating, and using the hand cue for the target sound.
- Have the child say the syllables on his own. Make this a game. When he says the syllable, he takes a turn.
- Practice at the syllable level until the child can say a variety of syllables reliably on his own.
- Model short, single words with the target sound at the beginning of the word and have the child repeat. If this is successful, have the child say single words on his own, cueing himself with the hand cue if necessary.
- Practice the target sound at the end, and then in the middle of words.

Extension Activity

- Listen for and model use of the target sound in everyday speech.

## Study Questions Chapter 7

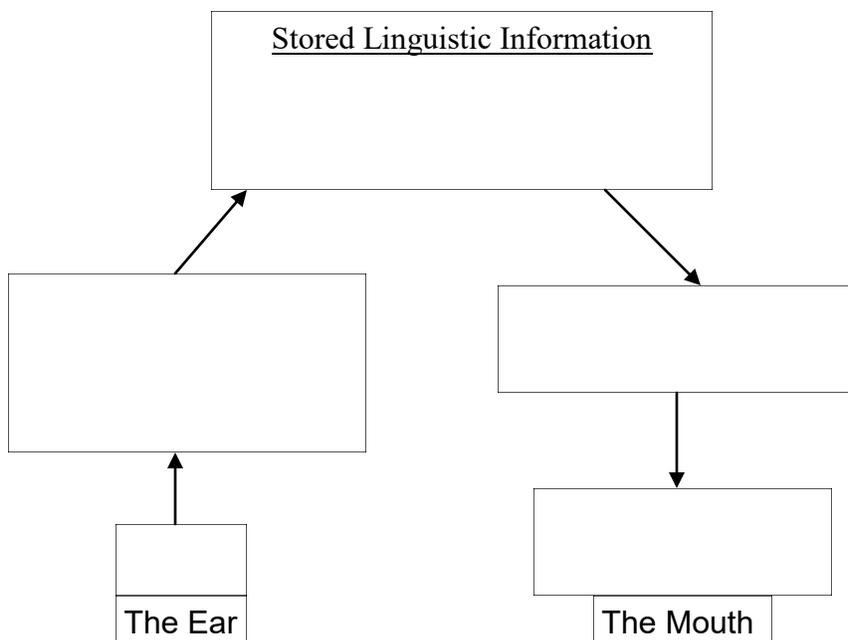
1. What are some phonemes that most children can say before age 3:

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2. What is a phonological process?

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3. Fill in the missing information about the speech processing skills, both input (starting at the ear) and output (ending at the mouth) skills, that the Sign Sounds hand cues help to develop:



4. Explain why Sign Sounds™ helps develop auditory perception of speech \_\_\_\_\_

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5. Why are the Sign Sounds hand cues very helpful to children with childhood verbal apraxia?

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## Notes

## The Versatility of Sign Sounds™

Sign Sounds™ is a system of hand cues to represent speech sounds; the hand cues are based on how and where phonemes are made, and whether they are voiced or voiceless. There are five basic rules to using Sign Sounds™ as explained in chapter one. All the English consonant, vowel and diphthong hand cues are shown as still images on the Hand Cue Photo Cards, and as moving images on the Sign Sounds™ DVD.

Sign Sounds™ hand cues are visual and tactile-kinesthetic and can be used both receptively (to help identify what sound someone else is saying) and expressively (to show what sound the user wants to say). Sign Sounds hand cues highlight speech sounds and distinguish phonemes.

Sign Sounds™ can be used to develop phonological awareness, phonics/reading, spelling, language (vocabulary, morphology and syntax), and speech (sound system rules, motor programming, and articulation).

Sign Sounds™ can be used with pre-school aged children, and school-aged children, individually or in groups. Sign Sounds can be used with typically-developing children, adults, ESL students, and children with a wide range of learning differences.

The simplicity of Sign Sounds™ accounts for its wide applicability and versatility, allowing a parent or teacher to use this one method to develop a range of complimentary skills.

## **About the Author**

Jill Hicks obtained a Master of Science (Applied) degree in Speech-Language Pathology from McGill University in 1983. Jill also has an undergraduate Bachelor of Arts degree with a combined major in psychology and linguistics from Carleton University in 1981.

Jill has most recently worked as a speech-language pathologist in the school system and in private practice in Nova Scotia.

Jill has a broad range of experience working with preschool and school-aged children, both typically-developing and those with developmental delay, learning disability, and other learning challenges. Jill combines her knowledge of speech, language and literacy development with her hands-on experience when she develops speech and language materials and curriculum.

## **Sign Sounds™ Workshops**

Jill Hicks is available to give seminars to teach the Sign Sounds™ system. Workshops cover the material contained in this book—learning the system of Sign Sounds™ hand cues and then learning how to use them to develop a variety of speech, language and literacy skills. Jill's workshops also include numerous video examples, audience participation, and small group practice. Handouts and certificates are provided to participants.

If you're considering a Sign Sounds™ workshop for your school or school district, preschool, professional association or parent group, please contact Jill for details regarding fees and scheduling.

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