PHONOLOGICAL AWARENESS

for
Speech/Language Pathologists
and their
Educational Partners

July 1, 2002

Louisiana Department of Education
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State Superintendent of Education

reaching for results

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Phonological Awareness

Introduction

Literacy for all students is a national educational goal. To reach this worthy accomplishment, today's educators must know how to teach reading and writing to every student, even those with significant disabilities or special needs. Speech language pathologists (SLPs) frequently provide services to students identified with communication disabilities. These communication disabilities can impede a student's ability to read, write, speak, listen, and think - all five components of literacy. The SLP needs to know how to support the development of literacy so these students can be successful.

Teaching students to read has changed radically in the past 20 years. Research has shown that phonological awareness is one of the key predictors of reading success. Although some students arrive at school with well-developed phonological awareness skills, it is clear that many do not. Students with communication disabilities often exhibit limited phonological skills and limited reading skills (Swank, 1998). It quickly becomes evident that both the educator and specialist must provide explicit, systematic instruction in this area.

SLPs and teachers often work together, or collaborate, to provide a range of services for children with communication disabilities. This collaboration is especially meaningful to support literacy. Both teachers and SLPs need knowledge and skills in phonological awareness to teach students in the most effective manner. This booklet is designed to guide SLPs and teachers who work with fragile readers to correctly assess, instruct, and monitor students' growth in developing phonological awareness. It has been written to address the student with identified disabilities; however, it also describes the typical reader at each stage. Each section has specific examples of interventions to develop the needed skill. SLPs and teachers can collaborate and use the instructional ideas together in a classroom; an SLP can use them in an individual or small group remediation session; or a teacher can use them to underscore the daily reading instruction in the classroom.

This booklet begins with a review of language as the basis for reading. The next chapters present critical aspects of phonetics, phonology, vowels, consonants, and

syllables - the building blocks of phonological awareness. A definition and short description has been provided, followed by the importance of this skill for emergent readers and another section on the characteristics in particular special populations. The SLP's role is explained for both direct and indirect interventions. Finally, three interventions are presented which help to show what might be done in a variety of circumstances, such as elementary or secondary school, using tradebooks or basal readers, and individually or in groups.

This booklet on phonological awareness was written to assist speech/language pathologists (SLPs) and their educational partners (i.e., special and regular education teachers, related service providers) in working with students with disabilities who are at-risk or having difficulty learning to read. It is a goal of the Louisiana Department of Education that all children become proficient readers. Phonological awareness is the beginning of this process. SLPs are the ideal instructors for working with sound recognition. Their background in phonetics allows them to help students with learning sound recognition, sound production, letter recognition and decoding.

It is important to remember that nothing has changed in the evaluation criteria or procedures for determining if a student has a speech or language impairment in the *Pupil Appraisal Handbook*. Many students on the SLPs caseloads are at-risk for having difficulty learning to read. It is not the intent of this booklet to identify more students with speech or language impairments. SLPS are being called on to provide support and interventions to students in the general education classroom; what better way to assist students and their educational partners than by providing them assistance in phonological awareness activities.

As practitioners, we hope that this booklet will increase the understanding of phonological awareness, highlight interventions that will support students' learning, and forge new alliances between SLPs and their general and special education colleagues. We believe that you will find this document interesting, reader-friendly, and that it will raise your phonological awareness, too!

Chapter 1

Language As The Basis For Reading

This booklet has an overall message and ten assumptions. We believe that knowledgeable, skilled professionals are required to teach emergent readers and writers. **Phonological awareness** (PA) is a critical knowledge and skill for emergent readers. It needs to be assessed and taught to most children by both teachers and speech language pathologists as educational partners.

The current research in reading instruction has led us to these ten assumptions.

1. Language is the basis for reading.
2. When it is effectively supported, language in all of its forms leads to print.
3. Literacy has five inter-related components - reading, writing, speaking, listening, and thinking.
4. Literacy is important for all learners.
5. Learning to read English is easier for some children than others.
6. English is a morpho-phonemic language.
7. Reading and spelling in English are overwhelmingly rule-governed and predictable.
8. Proficient educators must know how students learn to read, in order to teach children to read. However, proficient readers are often unaware of what they do to read.
9. Phonological awareness is the critical first step in the hierarchy of reading skills.
10. General and special educators must partner with each other to enable students with disabilities who are eligible under IDEA to take this step in becoming literate.

Language is the basis for reading. General educators, special educators, reading researchers, linguists and speech language pathologists agree that spoken language is the starting place for written language or reading. Although there are variations in this acquisition for those with sensory disabilities (deafness, blindness, severe dysarthria), it is critical to acknowledge that the phonemes or sounds of a spoken language drive the spellings or orthography of the written version.

This principle is paramount when we teach children to read. We do not begin solely with letters or letter names. We actually begin before that point with phonological awareness. *Phonological awareness* is the conscious ability to manipulate the individual speech sounds of one's language. It is a **metalinguistic** skill characterized by rhyming, combining and segmenting words, as well as adding, deleting and substituting **phonemes** in words, and recognizing the position of a phoneme in a word. It is an auditory-based task - it does not require looking at print forms or mapping phonemes onto graphemes (letter patterns).

Therefore, phonological awareness is the first step in teaching a child the code to reading. Remember, it is a code. The direction is from speech to print. Speech is made up of sounds. They are only auditory entities. Letters are used to represent those sounds. This makes written language possible. The letters make reading possible. Letters do not have, or make, sounds as we often overhear in classrooms. "What sound does this letter make?" Letters do not have sounds. Rather, sounds need letters (or some print form) to be permanent. Speech has sounds. "Did you hear a /t/ sound in this word?" **The letters are arbitrary or abstract - not the sounds.** In fact, the sounds are concrete and stable from word to word. It is the letters that we choose to represent those sounds that vary. The many different methods we use to identify every sound with particular **graphemes** constitute the reading code. Students must learn that code.

To learn that code, students must be able to **HEAR** phonemes, **SEE** letters and letter patterns, and **RELATE** them to each other. When this becomes automatic and efficient, the student can read words. A good reader does not look at text and see letters or words. He hears sounds and experiences meaning. We must teach reading in the same direction as our language works. Sounds come first. Sounds need letters to anchor them to the page. Knowing this, the SLP and the teacher can assist children to hear the sounds in words (PA), map them onto graphemes (**phonics**, **decoding**), and eventually use the same patterns when they write those words (**spelling**).

This first step of phonological awareness could be overlooked in an effort to get to the letters. It is true that many children are learning the alphabet before formal schooling or in the first year of school, such as in kindergarten. This is the process of learning the names of the letters. It is important to know the names of the letters. **Letters have names, but they do not have sounds.** These names

allow us to identify the letters, spell, and refer to the over 200 patterns we use in English to represent the sounds of words in print. English is **morpho-phonemic**. It uses a combination of phonemes (sounds), the smallest elements of speech, and morphemes, the smallest elements of meaning to assemble the words we use. If we think a spelling is odd or irregular, it is usually because the spelling preserves a meaning or link to a related word, rather than a link to a phoneme or sound. Because English does both, it uses what is called a **deep alphabet**. There is not a one-to-one correspondence between sounds and letters.

One of the reasons that phonics and decoding skills are difficult for some children is this lack of correspondence. English has 44 sounds or phonemes. The alphabet we use has only 26 letters. We cannot match up sounds to letters; there are not enough. Therefore, we need to learn to recognize and manipulate all the sounds first, and then a bit later, we can match them up with graphemes - letters or letter patterns. A phoneme may be represented by many different letter patterns. The vowel sound long /e/ can be found in print as /e/, /ee/, /ea/, /y/, and consonant /f/ can be represented as /f/, /ph/, /ough/, and /ff/, to name a few spellings. You can see why letters cannot have sounds, but sounds are stable and simply present themselves in many different letter patterns. This fact underlies the importance of phonological awareness. A student must "be" aware of this situation. It may need to be taught. It cannot begin with print letters or multiple spellings or avoiding non-phonemic spellings. **It must begin with the manipulation of the sounds without any connection to the graphemes.** This auditory task is well suited to the SLP's training, knowledge, and skills. Early PA interventions can and should be a responsibility of the SLP for students with communication disabilities. Classroom teachers need to know these steps to help prepare all children to be successful readers.

Before we go into depth in each of the areas of PA, it will be helpful to review them overall. There is general agreement in the reading field that PA is composed of rhyming, hearing word boundaries, segmenting words into parts or syllables, blending words from parts or syllables, adding, deleting, substituting phonemes in words, knowing the location of phonemes in words, and using rime and onset. To some degree, this above list is in ascending order of difficulty for most children. Goldsworthy (1999) and others would order the tasks from easiest to most difficult as sentence level, word level, and phoneme level. The term **phonemic awareness** refers to those parts of PA which are focused only on the manipulation

of phonemes. Phonemic awareness in a student would signal that student's readiness for phonics and decoding- the next step on the path to word recognition.

Rhyming and knowing word boundaries (how many words do you hear in this sentence?) are covered in several sections of this booklet as integrated skills rather than stand-alone skills. The PA assessments routinely check rhyming, and there are many activities that the SLP or teacher can use to develop rhyming in children. Nursery rhymes, poems, songs, chants, rhyming books, are excellent vehicles to teach this skill. Students should be read to often, and rhyming activities should be a part of the classroom or therapy session routinely. Recognizing word boundaries is important at the sentence and meaning level for students with limited receptive vocabulary, and can be challenging for English language learners. We suggest it be addressed enthusiastically in individual and small group-work to make other PA skill training more effective.

SUMMARY

The three pre-reader indices that best predict reading success are:

- Letter Knowledge
- Phonological Awareness
  - Words
  - Syllables
  - Phonemes
- Knowledge about Print

WHAT MAKES PHONOLOGICAL AWARENESS DIFFICULT?

- We speak in phrases, not words!
- Students must shift their attention from the meaning (content) of language to the structure (form).
- Phonemes are abstract - meaningless in themselves.
- It is difficult to attend to one sound in a word. Sounds overlap and merge in speech.
- Sounds are influenced by context.

FIVE SAMPLE TASKS OF PHONEMIC AWARENESS

Task 1: Knowledge of nursery rhymes and developing an ear for the sounds of words.
Sample Exercise: Listen to a nursery rhyme. Have children identify the rhyming words they hear.

Task 2: The ability to compare and contrast sounds of words for similarities and differences (oddity tasks)
Sample Exercise: I will say three words. Two of these words start with the same sound. One word starts with a different sound. Listen to the words and tell me which word starts with a different sound.
Sit, man, make.
(correct response, *sit*)

Task 3: The ability to orally blend words and split syllables.
Sample Exercise: I will break apart the sounds of a word. Then you put the parts together to make a whole word. /s/ /a/ /t/
What's the word? (correct response, *sat*)

Task 4: The ability to orally segment words.
Sample Exercise: Display an object or picture card. What sounds do you hear in the word *hat*?
(*hat* /h/ /a/ /t/)

Task 5: The ability to do phonemic manipulation tasks.
Sample Exercise: Replace the first sound in the word *sat* with /m/.
What's the new word?
(correct response, *mat*)

STEPS FOR INSTRUCTION AND INTERVENTION

PHONOLOGICAL

Replication

- Repeat this sentence *He likes riding his bike.* Your turn . . .
- Your word is *apple*, say *apple*.
- Your sound is /a/, say /a/. (phonemic)

Beginning Phonological Awareness

- Words in a sentence: *The dog is digging.* Push a block for each word. (4 blocks)
- Blending and segmenting compound words: Put these words together to make one word. Say s*now* pause *man*. What word did I say? (s*nowman)*
- Say *rainbow,* now say the word parts in *rainbow*. (*rain* pause *bow*)
- Blend/segment syllables: Put these sounds together to make a word *ta…ble*
- What word did I say? (*table*)
- Your word is *basket*, say *basket* and clap the parts. (2 claps *bas…ket*)

Rhyming

- Recognize: Do *mouse* and *house* rhyme? (*Yes*)
- Generate: Tell me as many words that you know that rhyme with the word *cat*. (*bat, hat, sat, mat, splat, lat, zat* *nonsense words accepted)

PHONEMIC

Phoneme Blending

- Onset and rime: /s/ /am/ What word did I say? (*Sam*)
- Blending: /s/ /a/ /t/ What word did I say? (*sat*)

Phoneme Isolation

- Initial sound: What's the beginning sound in the word *lap*? (/l/)
- Final sound: What's the last sound in the word *trick?* (/k/)
- Medial sound: What's the middle sound in the word *lake*? (/a/)

Phoneme Segmentation

- What sounds do you hear in the word *hot*? (/h/ /o/ /t/)

Phoneme Manipulation

- Deletion: What word would be left if the /k/ sound were taken away from *ca*t? (*at*)
- Addition: What word would be made if you added a /p/ sound to the beginning of the word *up*? (*pup*)
- Change: The word is *run*, say *run*. Now change the /u/ to /a/, what word do you have? (*ran*)

IMPLICATIONS FOR EMERGENT READERS

Typical learners come to school with highly diverse backgrounds in language, early literacy, print environments, and modeled reading/writing. Some will require intensive practice in phonological awareness skills and some will catch on very quickly. Children need to be assessed and supported at their current functioning level. Reading instruction will be successful if students have a strong phonological base. Many educators have limited knowledge of the role of language in reading and others have a misconception that visual skills are the basis of reading (Moats and Lyon, 1996).

IMPLICATIONS FOR SPECIAL POPULATIONS

Students identified with special needs frequently have language and reading problems. In fact 80% of students with IEPs have language and reading goals (Kamhi, 1999). Students with mild/moderate disabilities almost always are poor or struggling readers (Lyon, 1999). Students with moderate/severe disabilities are often not taught to read at all (Sandberg & Hjelmquist, 1996). Many children with phonological awareness deficits may not have other noticeable speech and language problems (Wazowicz, 1998). Schimmel, Edwards & Prickett (1999) report that deaf students profit from intensive lessons in phonological awareness, a fact that is overlooked by many educators of this population. Miles (2000) reports that deaf-blind individuals need explicit, systematic instruction in reading for prolonged periods of time to become literate. Speech language pathologists (SLPs) often have limited knowledge in this area and rely upon teachers to make the link between phonological awareness and early reading skills.

STUDENT ASSESSMENT OF THE SKILL

Students can be assessed in phonological awareness by age 3, using one of about ten (10) standardized tests, and many more non-standardized ones. It is not necessary to give a standardized test to determine if a child needs support in the conscious manipulation of phonemes. Most children need some formal training, and once the teacher begins, it becomes clear who needs greater assistance in grasping the concepts. **These students do not need assessment; they need intervention.** However, some assessment can be helpful for the SLP and the teacher. A list of commercially available tests is included in Chapter 8.

ROLE OF THE SLP

The SLP has an important and direct role in the development of literacy for students with communication disorders (ASHA, 2001). Literacy is a primary goal of all educators, and school-based SLPs, or those working with children in other settings, have a responsibility to link their speech and language interventions to the student's development of literacy. Each section of this booklet outlines the importance of a particular PA skill for students and gives examples of lessons and activities that help to support the reading process.

Direct

The SLP can work on PA skills with a student one-on-one, in a small group, or in the classroom. S/he can team-teach in a classroom or work with other special and general educators.

Indirect

SLPs can consult with parents, teachers, or other school personnel to provide appropriate PA services for students who need them. S/he can assist with assessment, lesson plan writing, follow-up, materials development, or staff development.

Chapter 2

Overview of Phonetics

Phonetics is the study of the speech sounds in all languages. These sounds, called phonemes, are the building blocks of spoken language and words. A phoneme is the smallest unit that can make one word different from another. The speakers of a language are rarely able to list all of the phonemes of their language even though they use them all the time. Linguists inventory and categorize all the sounds of a language. Persons who are aware of the structure of the language they speak have a metalinguistic skill. In order to read and write any alphabetic symbol system, such as English, the speaker needs to know how to distinguish between all the phonemes. Educators and teachers of reading have some training in how to do this, but it is more difficult for educators who have not studied phonetics. Speech language pathologists have extensive training in phonetics, must learn and use the **phonetic alphabet**, and have developed a keen ear for the essential differences in the pronunciation of phonemes.

Very few people can describe the speech sound inventory because they learned to talk in natural environments and not through the explicit teaching of phonemes. Each language has a set number of phonemes and some degree of variation is tolerated within each speaking group in the form of accented phonemes or regional or dialectal differences. Although most speech language pathologists would agree that there are 44 phonemes in Standard English, Moats (2000) reports that linguists' disagree, and there are estimates ranging from 40 to 52. Phonemes are divided into consonants and vowels, distinctly different from each other in purpose and manner of production. Both types will be discussed in detail in the following chapters.

Phonemes are un-segmented in words and often co-articulated. They blend into each other in the flow of speech, and often they affect the properties of adjoining sounds in a word. The challenge of learning phonetics is evident when one begins to learn a new language. Initially it is impossible to hear individual sounds and you successfully imitate the phonemes long before you can isolate them or recognize when one re-occurs in another word. Finally, phonemes acoustically change to some extent when they are artificially removed from the running context of speech and pronounced alone.

Phonemes are abstractions that can be isolated for teaching purposes, but do not exist that way at any other time. Teachers of reading and speech language pathologists must be able to accurately recognize all the phonemes in a language in order to teach reading. This requires considerable practice and the application of refined metalinguistic skills. Not all teachers are equally successful learning all the phonemes, teaching the phonetic concept, or explaining individual sounds to emerging readers. Speech language pathologists are often better prepared to present this material to youngsters, particularly those who initially might struggle with it. Because it is abstract and not intuitive, teachers often presented PA in a confusing or rapid format. While some students can pick up the necessary word and sound play on their own, many cannot. They require explicit instruction in this aspect of phonological awareness. **Manipulating only the phonemes of a language is referred to as phonemic awareness.** The rhyming, segmenting, rime, and onset tasks that were noted in Chapter One, would not be included in phonemic awareness. Teachers and SLPs who teach phonemic awareness to children as a precursor to reading and literacy must have the following skills

- recognize and list all the English phonemes
- produce all the phonemes in a standard manner
- know the place and manner of sound production in the mouth
- know about the existence of a phonetic alphabet or be able to use it
- appreciate the confusions that children commonly make
- accurately count the number of phonemes in words
- clearly understand the difference between phonemes and graphemes in English

Teachers and SLPs need to have this knowledge and these skills to correctly frame early reading activities. It is not necessary for children to exhibit all of these skills, nor should they be formally taught them. The list of PA skills at the end of this chapter is a good outline of what skills emerging readers need to have. Obviously, the adults need to have a much broader grasp of the information than the students do.

Phonetic transcriptions are an efficient way to represent the abstract units called phonemes. It is impossible to rely on the hundreds of English spellings to mark phonemes. SLPs are more likely to use phonetic transcriptions to "capture" the sounds of the language than teachers are. This can be useful at this stage of learning as long as students are not asked to *read* or *memorize* the symbols.

Students should only be engaging in auditory tasks or using pictures in PA, not print. SLPs should be cautious using the phonetic alphabet if it is not viewed as helpful by the teaching staff.

The phonetic alphabet is included in Appendix B as a reminder of the sounds of English. These are completely separate from the names of the letters. Once the child can demonstrate the phonological awareness skills in the list on the next page, teachers and SLPs can proceed to teaching phonics and decoding skills with confidence. **Phonics rules are not a part of phonological awareness and may in fact confuse the emerging reader if introduced too early or simultaneously with the sounds or phonemes of the language.**

Before we address consonants and vowels in depth in the next chapters, it is wise to look at the existing assessments in phonological awareness. There is still a limited amount of normative data on this topic for typical students as well as those with identified special needs. Researchers agree that while the presence of well developed phonological awareness skills is one of the best predictors of early reading, PA is also easier to develop once a student is reading and analyzing the structure of language. Once a student knows the code, s/he uses the code to study the parts of words. It enhances reading, and reading strengthens PA. Therefore, assessment is less formal than we conduct in other academic areas. **The important point is not the score the student gets on the "test," but rather the identification of auditorially-based language skills that may need support.**

A list of the expected skills in phonological awareness, with an emphasis on phonemic awareness, is on the next page. This serves as a frame for the chapters that follow. If students are struggling with particular aspects of phonological awareness, an assessment may help determine if this is case, and can serve to measure progress or growth once intervention is begun. Specific examples of assessment are found in Chapter 8.

PHONOLOGICAL AWARENESS SKILL SEQUENCE

Skill	Example	Typically Mastered
Word		
Isolating words in sentence	She/ is/ a/ good/ player.	Preschool
Rhyme		
Recognition	Does *glass* rhyme with *pass*	Preschool
Production	What rhymes with *blue*	Kindergarten
Syllable		
Blending	*pan* + *cake* = *pancake*	Preschool
Segmentation	swim/suit	Kindergarten
Deletion	Say *hotdog* without *hot*	Kindergarten
Phoneme		
Isolation of initial/final sound	What is the first sound in *fox*	Kindergarten
Blending	What am I saying? *f-ence*	1st grade
Complete segmentation	What are the sounds in *bag*	1st grade
Manipulations of sounds		
Addition	Add /t/ to *an*	Kg-1st grade
Deletion	Say *meat* without/m/	1st grade
	Say *play* without /p/	2nd grade
	Say *play* without /l/	3rd grade
Substitution	Say *yard* and instead of /y/ say /h/	1st - 3rd grade
Transposition	*wristwatch* becomes *watchwrist*	1st - 3rd grade
	Spot to *stop*	
	What is changing each time?	

TEACHING STRATEGIES AND INTERVENTIONS

The next chapters in this booklet will outline specific aspects of phonemic awareness, the impact on emerging readers, the impact on special populations, and what speech language pathologists and teachers can do to support all students to become successful readers. Although each chapter will have sample interventions, these overall instructional strategies are applicable for each set of skills. Younger children or those with more significant disabilities will need more intensified interventions; older students will need stimulus words and activities that represent

their areas of interest. All students will need to be motivated to learn and practice the concepts.

Here are the over-arching instructional strategies for PA.

1. Provide brief instructional sessions.
2. Teach phonological awareness skills explicitly and systematically.
3. Progress from easier to more difficult phonemic awareness activities.
4. Model phonemic awareness tasks and responses orally.
5. Make student's cognitive manipulations of sounds overt by using concrete representations (i.e., markers, pictures, and Elkonin boxes) of sounds. Limit letter-sound correspondence in all phonemic awareness interventions.
6. When instruction begins to focus on phonemic level use short words.
7. Focus on segmentation or a combination of blending and segmenting.
8. Add letter-sound correspondence instruction to phonemic awareness interventions as the final step before teaching phonics and decoding.

IMPLICATIONS FOR EMERGENT READERS

According to Liberman, Shankweiler & Liberman (1989), with exposure 75% of students intuitively discover the relationship between speech sounds and printed text and learn to read in the first two years of school. That means 25%, or one out of four children, will need direct instruction and repeated practice with the concepts of phonetics and printed symbols to be successful. Many of them will "get stuck" at the phonics stage of learning because they do not have these phonetics fundamentals in place yet. Their teachers must know what skills they are missing, and how to teach those skills. Their teachers must be able to design and match the PA instruction for the students' ages and interests so it does not appear to be "preschool work" or embarrass them. General educators and SLPs need to know the basics of phonetics to assure that these students do not fall farther behind or be inappropriately referred for special education assessment.

IMPLICATIONS FOR SPECIAL POPULATIONS

Students' who are deaf or hard of hearing, have developmental disabilities, or cognitive limitations will need specific instruction in phonemic awareness. Children with oral motor disabilities, oral-facial anomalies, and neuro-motor impairments will

also struggle with the fine motor skills necessary to produce these phonemes. Often – but not always – speech production problems will signal phonemic awareness difficulties as well. Determining which students have intact phonemic awareness, and which do not, requires thoughtful and thorough assessment.

ROLE OF THE SLP

Direct

The speech language pathologist will provide assessment and therapy for students with speech and language disabilities. The therapist will be able to assist students with the correct manner and placement of the articulators for each phoneme. SLPs typically work with these students to improve speech intelligibility. They can use the same techniques to facilitate phonemic awareness. The SLP directly assesses students who are referred.

Indirect

The speech language pathologists and teachers can provide language environment and speech development activities for the whole class. Read-aloud stories can be used to support listening activities, and students can use computer software programs that are available commercially.

THREE SAMPLE ACTIVITIES FOR THE SLP

1. Play the "same or different" game. Generate pairs of words that are either identical or that differ by one phoneme. Say them out loud and ask the child if the words are the same or different. Children should rarely miss the ones that are different. Begin with maximal pairs (easy to distinguish differences between phonemes) to minimal pairs (consonant cognates or vowel differences)

Maximal Pairs		Minimal Pairs	
chest	west	clap	clip
kite	right	bat	pat
mail	sail	tack	tag

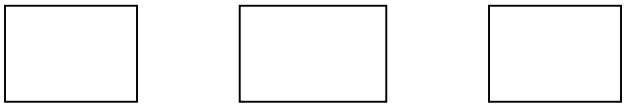
2. Repeat Exercise 1 with nonsense words.

3. Give each student five blank sticky notes (Post-its) to put on his or her desk. Ask the student to pick up a sticky note from the group of notes for each speech sound in a word you say. Say a 3-5 phoneme word from the students' word list (e.g., reading, spelling, science, mathematics).

Say "*cheese*". Student should assemble the "stickys" as

ch ee z

Say "*Good, now change it to 'cheat'*"



ch ea t

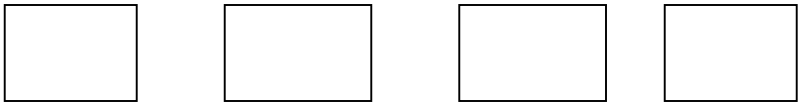
Direct the student to pull off the third sticky note from the first word and replace it with another one from the original group.

Next – Say "*Good, now change it to 'chat'*"

ch a t

Direct the student to pull off the second sticky note from the second word and replace it with another one from the original group.

Next – Say "*Good, now change it to 'chatter'*"



ch a t er

Direct the student to add a sticky note from the original group to the far right of the sticky note sequence.

Chapter 3

Consonants

Consonants are speech sounds made by partially or completely blocking the vocal air stream. Consonants are the sounds that are not vowels. Some of the consonants are vowel-like in certain patterns, such as /r/ in *card*. The consonant sounds of English are listed in the table in this chapter. Place and manner of articulation can categorize the 25 basic consonant sounds. The place refers to the location in the mouth that the air stream is blocked to produce the sound. There are seven places (lips, lips and teeth, tongue between teeth, tongue behind teeth, roof of mouth, back of mouth, and throat) in the mouth to produce the consonants of English. The manner of articulation refers to the way in which the air stream is stopped. There are six ways (stop, nasal, fricative, affricate, glide and liquid) to interfere with the flow of air out of the mouth. The chart shows the 25 consonants identified by both place of articulation and manner. Students need to be taught how to produce any consonant sound they are saying incorrectly. The SLP may be the best person to assist these students. Once the teacher understands the place and manner chart in Appendix C s/he can explain how to produce the sound, instead of merely modeling it.

Briefly, *bilabials* involve both lips [b]; while *labiodental* means lips and teeth [f]; *Interdental* refers to tongue and teeth [th]; *alveolar* has the tongue behind the teeth [t]; and *palatal* uses the roof of the mouth [sh]. *Velars* are produced in the back of the mouth [k], and the single *glottal* sound is produced in the throat [h].

Sounds that completely stop the airflow are aptly named *stops* [b] and [t] while all the others are *continuants*. Those channeling air through the nose are *nasals* [m] and [n], and those that create friction are called *fricatives* [f] and [s]. *Affricates* have a stop closure and then a release of air [ch] and [j]. *Liquids* are the most difficult English sounds for children to produce because they have no clear beginning or ending and seem to float in the mouth [l] and [r]. The liquids also vary the most in regional dialects and are easily confused by English language learners. *Glides* are formed with the glottis open and no obstruction of the airstream and the mouth forms the position of the next phoneme, typically a vowel. We use the glottal stop in casual speech and in some dialect variations.

Finally, consonants are defined as either *voiced* or *voiceless*. The vocal cords are touching for a voiced consonant, and open for a voiceless one. English uses many pairs of consonants, called *cognates*, in which the manner and place of articulation are the same, however the two phonemes vary only by voicing. Examples are /p/ and /b/, /t/ and /d/, and /f/ and /v/. In each case, the first phoneme is voiceless and the second one is voiced. This can be confusing for educators who have not studied phonetics, and they may try to use other, less accurate ways to differentiate these phonemes.

English has a preponderance of consonants compared to some languages (Italian, Spanish). Since, words typically begin and end with consonant sounds, phonemic awareness activities should focus on the difference between these sounds, their clear and accurate production, and listening for the voiced and unvoiced characteristics that are critical for English. While three English phonemes are nasal /m/, /n/ and /ng/, adding nasality to other phonemes does not alter them significantly. In other words, nasality is not a distinctive feature of English. It does not differentiate one phoneme from another, although it is one manner of articulation.

Consonant Phonemes (Sounds) in English

b	**big**	**m**	**man, limb**
ch	**chimp, match**	**n**	**no, know, gnat, pneumonia**
sh	**shark**	**p**	**pony**
d	**dog, flagged**	**ng**	**sing**
th-voiced	**then**	**r**	**rat, write**
f	**fan, phone**	**s**	**seal, city**
th-unvoiced	**thumb**	**t**	**tiger, raked**
g	**goat**	**v**	**vulture**
wh	**where**	**w**	**water**
h	**hammer**	**y**	**yak**
j	**jet, giant**	**z**	**zebra, is, xylophone**
k	**kitten, duck**	**zh**	**measure**
l	**lion, simple, label**		

Some students may have one or more articulation errors when they speak. This is more common with children under 7 years of age, or those with developmental

disabilities. **Phonological awareness activities can be highly beneficial for them.** Students with dialectal differences or regional speech patterns will benefit from consonant training. Even those children who cannot produce some English phonemes due to *dysarthria,* or *hearing loss*, or other conditions should receive phonological awareness training. They may be able to differentiate what they cannot produce, and certainly need the skill as much or more than students with typical or standard English speech production.

IMPLICATIONS FOR EMERGENT READERS

Emergent readers often identify and imitate consonant phonemes first, because they are easier to "see" when produced by others, and are qualitatively different from each other. This is not true of vowel phonemes. Some typical learners practice on their own using **alliteration** games and songs (Seven Silly Snakes). Consonants at the ends of words remain more elusive for them, and attention needs to be drawn to the whole word, not just the initial sound. PA activities for this skill can be integrated easily into preschool, Head Start, and kindergarten programs.

IMPLICATIONS FOR SPECIAL POPULATIONS

Children identified within the boundaries of special populations are those students who also are likely to be poor readers. The article T*eaching is a Rocket Science,* states, "The language skills that most reliably distinguish good and poor readers are specific to the phonological or speech–sound processing system. Those skills include awareness of linguistic units that lie within a word (consonants, vowels, syllables, grammatical endings, meaningful parts, and the spelling units that represent them) and fluency in recognition and recall of letters and spelling patterns that make up words." (AFT, 1999) It is important that all children understand the speech-sound processing system and consonants are a big part of that system.

Consonant sounds should be taught first, they provide the framework for words. Through manner and placement, they can be visualized. The consonant /r/ may be the most difficult for some students. It is one consonant that is not easily visualized. Sometimes it carries more of a vowel quality, and therefore is difficult for a child to distinguish.

Consonants are often over-represented in PA activities in workbooks, especially in the initial position. SLPs will need to balance vowels and consonants, as well as covering all consonants (22) in all 3 positions. Selecting words in the student's oral vocabulary is important. New words like psuedo words for some children can be helpful for determining consonant phonemes without the distraction of meaning.

The identified special education child who is having difficulty in reading may be unable to hear many of the high frequency sounds or be unable to discriminate the sounds due to hearing loss. Often young children will have middle ear infections and are not treated. This intermittent hearing loss has a great impact on the development of sounds. Children with hearing loss are at great risk; they do not have the auditory input or the processing system.

ROLE OF THE SLP

As stated in the *ASHA Roles and Responsibilities of Speech-Language Pathologists with respect to Reading and Writing in Children and Adolescents*, the role of a speech language pathologist is both direct and indirect in facilitating literacy for children with communication disorders (ASHA 2001). Our role relates to prevention, identification, assessment, intervention, monitoring and follow-up. Our role may vary due to the settings we have in the school system; however, our role is to facilitate which may be by means of direct intervention or through collaborative efforts.

THREE SAMPLE ACTIVITIES

1. Since consonants are divided into voiced and voiceless, a game that can be played with the student, is for the student to feel, using his hand on his voice box, to determine if the sound is a (motor) voiced or voiceless sound. The therapist may choose to utilize picture cards with the sound and green light or red light for voiced or voiceless sounds.

2. *Sounds Abound* by LinguiSystems, provides activities that include "match'em up". The SLP provides a picture page, and asks the child listen as the SLP names the pictures in each row. Then the child circles the picture that begins or ends

with the same sound as the first word in that row. Another one is called "odd one out". The child has to name the pictures in each row, and then, draw a line through the picture that doesn't end with the same sound as the others. Use the consonant pager for this, and be sure to cover all 22 consonants.

3. Segmenting is an important skill. One activity would be to have the child say each syllable, and then move a token into a square under the picture. Then, blend the syllables together and say the whole word.

Chapter 4

Vowels

Vowels are a class of open, unobstructed speech sounds that are not consonants. Every syllable must have a vowel, which is formed by the relatively free movement of the air stream through the mouth. All vowels are voiced; tongue and lip positions determine how each vowel sounds. Vowels can be stressed or unstressed and tense or lax. There are 18 vowel sounds in English.

Vowels are produced in the mouth by moving the tongue in three positions - front, middle, and back, and two heights - high or low. These two elements combined will produce 15 vowel sounds, plus three (3) more which are controlled by the liquid consonant /r/. These are /ar/, /er/, and /or/.

The 18 vowels sounds are critical to learning to **decode** (read) and **encode** (spell) English. Hearing the fine differences between vowel phonemes can be challenging for students and educators. While adults may use all the vowel sounds effortlessly, –the very fact that it is an unconscious activity, makes it hard to teach. Students, on the other hand, must be taught to hear fine differences or they will struggle immensely with phonics and decoding.

Short vowels are more common in English than long ones. *Short* refers to lax muscle strength rather than short duration. *Long* refers to tense muscle strength. The terms *long* and *short* are used in phonics programs, not in phonemic awareness activities. Students need to be taught all the different vowel phonemes without relating them to spelling digraphs. **Hearing the slight differences between phonemes is the focus - not spelling or graphemes.**

Diphthongs are vowels that glide in the middle, and the mouth shifts from one vowel position to another. In the word *toy,* the mouth shifts from /o/ to /i/. In the word *plow,* the mouth shifts from front position of /a/ to lip-rounded position of /u/.

The **schwa** is a lax vowel formed in the mid central region of the mouth. It is truly the middle or neutral position for the lips, tongue and jaw. As a result of its ease of production, many vowels in an unstressed syllable will be reduced to the schwa.

It is the most common vowel in English and by far the hardest one to spell. When students reach the phonics stage, they discover that every one of the vowel letters can represent the schwa sound. This makes it important for students to learn to hear the schwa in phonemic awareness training activities so later they can handle the spelling by memorization when they reach the encoding task of spelling much later.

The vowel chart included in Appendix D from Moats (2000) depicts all of the information on place of articulation for vowel sounds and their slight differences from each other. The diphthongs and the /r/ controlled vowels are added along the side. Teachers and SLPs may want to practice saying the vowel sounds on the chart from left to right to experience the minute differences in tongue, lips and jaw placement. Feeling the difference and hearing the differences without connecting the phonemes to graphemes is critical at the PA stage. Poor readers make many more vowel errors than consonant errors. Early explicit teaching and practice at the PA stage could make a big difference. Vowel work is also challenging for students and may require some innovative and engaging lessons to reinforce the skills.

Vowel Phonemes (Sounds) in English

Short or lax vowels		**Long or tense vowels**	
a	**had**	**a**	**made**
e	**bed**	**e**	**see**
i	**it**	**i**	**time**
o	**dog**	**o**	**tone**
schwa	**about**	**u**	
ar	**far**	**Other vowels**	
er	**her**	**oo**	**soon**
or	**for**	**oo**	**look**
er	**letter**	**oi**	**boy**
		ou	**out**
		aw	**law**

Combining Vowels and Consonants

PA activities may initially divide into consonant and vowel skills, but will quickly recombine to be more word like. It is helpful to know what phoneme patterns or words to emphasis that will be most helpful for children. PA activities should reflect the sounds of English that will be the most frequently encountered once reading instruction begins. The following lists show the most frequently occurring phonemes in the 1,000 most common words used by children in the primary grades (Feldman, 2000; Shefelbine, 1996).

Consonants		Consonant diagraphs	Inflectional endings
k	b	wh	s
f	d	th	ing
h	g	zh	es
l	j	sh	ed
n	m	ch	en
qu	p	ng	er
s	r		est
v	t		ly
t	w		
z	y		

IMPLICATIONS FOR EMERGENT READERS

Emergent readers of every age struggle with the slight differences in vowel sounds in English. The fact that there are eighteen (18) phonemes also surprises some general education teachers. Teachers spend more time teaching consonant than vowel phonemes at the PA instructional level as well as at the phonics instructional level. Because of the liberal use of the schwa phoneme, some instructors struggle themselves with "hearing" the vowel variations. These factors cause students to make many more spelling errors with vowels than they do with consonants when they reach the writing stage. In classrooms, teaching the vowel phonemes is often combined with teaching the vowel graphemes (i.e., phonics) and the combined information can be confusing. Students frequently simply guess. There are circumstances in which separating phonemes (sounds) from graphemes (letters) is the best method to provide direct, systematic instruction regarding vowels.

IMPLICATIONS FOR SPECIAL POPULATIONS

Phonemic awareness of vowels can be a particularly difficult task for our hearing impaired population as well as students with central auditory processing deficits. Students with fluctuating hearing losses due to chronic otitis media can also have difficulty in phonemic awareness tasks. Children with Down's Syndrome are prone to having problems with fluid problems in the middle ear and since vowels fall in the low to mid frequencies, these students may have difficulty in this area. Since some children diagnosed with Pervasive Development Disorder or High-Functioning Asperger's Syndrome have significant auditory processing problems, they too may have phonemic awareness problems. Dialect plays a role in vowel productions, so phomenic awareness of vowel sounds ahs to take dialectical variations into account when teaching or assessing phonemic awareness skills, i.e., Southern Dialectical variation "pin" for "pen." Some students classified Dyslexic or Specific Learning Disabled may also have problems in hearing the subtle vowel differences. Some students classified Speech or Language Impaired may have difficulty in the specific skill of phonemic awareness of vowel sounds.

ROLE OF THE SLP

Direct

The direct role of the speech language pathologist will be in the assessment and treatment of students suspected of and then found to have phonological awareness disorders (these will be students already classified with an exceptionality according to the *Pupil Appraisal Handbook*). The overall process will include phonological awareness of vowel sounds. If an SLP chooses to do phonological activities in the special education classroom, then these sessions could count as a group therapy session.

Indirect

The indirect role of the speech language pathologist will be as a consultant to regular and special education classroom teachers, For example, an SLP could possibly go into the classroom to teach or demonstrate a lesson on the vowel chart and phonological awareness activities of vowel sounds or to teach the concept of co-articulation and its affect on vowel sounds.

THREE SAMPLE ACTIVITIES

1. *The Harcourt Reading Program* (Harcourt, Inc. 2001) includes phonemic awareness activities of vowel sounds. The following activity is used in the development of the long vowel /o/ sound. **Sound Substitution:** Have the students listen for the wrong vowel sound. Tell the children that they can fix each word by replacing the vowel sound with a long /o/ sound. Do the first one as an example.

Ice cream cane (ice cream cone)
Dog bine (dog bone)
Telephene (telephone)
Telescape (telescope)
Jump ripe (jump rope)

2. The next activity develops phonemic awareness of the long vowel /i/, /y/,/ie/:

Rhyming: Tell children that *pie* and *my* are rhyming words - both end with the /i/sound. Repeat the words, emphasizing the /i/. Have children repeat the words *pie, my*.

Then have them tell other words that rhyme with *pie,* such as *my, try,* and *sky*. Say two of the words at a time, and have the children use them in a sentence. Have children repeat these sentences several times: *Why try to fry a pie*?, *The fly went by in the sky.* Ask children which words have the /i/ sound. Ask the children to close their eyes each time they hear a word with the /i/ sound. Say these words: *fry, pie, butterfly, small, walk.*

3. *Sound Search* by Marilyn Flynn, published by LinguiSystems has activities to target specific vowel sounds. The following activity targets the short /a/ in sentences.

Note: The instructions say to listen to your teacher say the vowel sound for this exercise. Then the students are instructed to circle the letters that make the short /a/ sound in the key words. However, these sentences could be read aloud and the students could raise their hands when they hear a word that has the short /a/ sound. This would then be a true phonological awareness activity.

1. Wave the flag.
2. Put the jam away.
3. You and I are first.
4. She is a fast talker.
5. You'll need a ladder.
6. It's my carnival mask.
7. Is this a treasure map?
8. He has gum in his hair.
9. I use a fan to keep cool.
10. My father got some gas.

Chapter 5

Phonology: Rules, Patterns, Sequences

Phonology is the study of the unconscious rules governing speech sound production. This includes the rules, patterns and sequences by which individual phonemes can be combined into words and phrases. The phonology of each language contains the rules to select the phoneme combinations speakers of that language will use. These rules are determined by biological reasons (what sounds the human articulatory - motor system can produce), cognitive reasons (how our brains catalog and classify meaning), and cultural reasons (what we value or believe). Speakers of a language recognize when another language is spoken by the differences in phonology - how the language sounds, which phonemes were chosen, which phonemes predominate, what features are unique. Phonology is what makes the "words different" from language to language - while the ideas and thoughts remain constant. There are notable differences in phonology rules. English has 44 phonemes, and Spanish has 18. Almost all Italian words end in vowels. Many Asian languages rely on tone differences of the same phoneme to convey meaning. French uses the uvula to "roll" the /r/ phoneme. Hebrew includes several glottal consonants that occlude the air stream low in the throat. Some African languages use the tongue and alveolar ridge to produce "click" phonemes. Our own phonology shapes us so strongly that we think other phonology systems sound "foreign" or we judge them more or less pleasing to our ear, depending on what we are used to. When we import words from other languages we replace their trilled r's (hor d'eorves) and glottal /gh/ phonemes (Van Gogh) with our own. In fact, Moats (2000) points out that when we make up new words they always sound like existing words in our language!

In previous chapters, we have briefly reviewed the biological descriptions of the phonemes of English. In this section, we will look at the structure of language so that we can teach phonological awareness skills to young children, increasing their opportunities for success as readers. We cannot address all of the English phonological patterns, but will highlight several that are important to the acquisition of reading. Knowledge of phonology is extremely important to teachers of reading at all grade levels, speech language pathologists, and special educators (Moats and Lyon, 1996). They need to know the topic well in order to teach typical

learners, fragile readers and students with special needs. "Phonological processing ability, the ability to identify, manipulate and remember strings of speech sounds, accounts for much of the difference between older good readers and poor readers and between novices who will learn to read easily and those who will struggle." (Moats, 2000)

Learning to read is learning a code - a code for sounds. Phonemes can only be heard, not seen. In order to "hold on to them," we need visual symbols that will make us think of those sounds. The symbols are the alphabet letters that we assign to represent those phonemes. Because our alphabet has only 26 letters and we have 44 sounds in English, we need to use some of the letters more than once. We also use the letters in different patterns to refer to the same sound; thus, we have over 200 spellings for these 44 phonemes. This is why we need to refer to the teaching of reading as the teaching of a sound-to-symbol (phoneme-to-grapheme) code. It is not a language that lacks rules, or is full of exceptions, or contradictions. The rules for the code are quite specific and stable and predictable, just as the sounds or phonemes are very stable and predictable, because the sounds do not change. The abstraction comes from the alphabet letter patterns that we assigned to the phonemes, which vary greatly. This is due to the use of a deep alphabet that reflects more than phonemic matches, but also from morphemic matches for words (Mann, 2000). That is, English has retained the spellings of many of the words it has acquired over 1600 years. These do not follow phonemic rules but are logical and help to trace derivation. Thus, the educator's knowledge of phonology leads to teaching students critical skills in phonemic awareness, phonics, word study, morphology, and more successful decoding as students get older.

Approaching reading as a code means that the teacher and SLP must stress the first layer of decoding skills, phonemic awareness. Students must be able to **HEAR** and consciously manipulate the speech sounds to be successful readers.

Here are some of the important rules, patterns, and sequences to teach, support, or remediate.

- Allophones
- Phonemic variations
- Aspirated consonants
- Minimal pairs
- Plurals and voicing

Allophones are variations in the spoken form of a phoneme that do not change the meaning. We find these variations are regional, e.g., in some parts of this country the word *grease* rhymes with *fleece*, while in other places the same word would rhyme with *knees*. In this example, the /s/ and /z/ phonemes are inter-changeable. The word has the same meaning but an allophonic feature that substitutes the phoneme. The words "pin" and "pen" are indistinguishable for some speakers unless you know the context. Others make a vowel difference between these words. Allophones are acceptable variations in speech and in reading. **Teachers need to know how to interpret writing or spelling "errors" that may reflect phoneme variants or allophones.**

Plurals and voicing are ruled based. In English, plurals and present tense are designated by adding the bound morpheme /s/ to the ends of nouns and verbs. If the word ends in a voiced consonant or vowel, the added phoneme is /z/ (*dogs*); if it ends in an unvoiced consonant, the phoneme is /s/ (*cats*). This is automatic in speech as the vocal cords remain in the previous phonemic position causing the production of /s/ or /z/. It can be confusing to children unless the SLP or teacher directs students to identify the phoneme or sound they hear, and that it could be either sound. It helps to say *listen and find out which sound it is.* Later when this phoneme is matched to the grapheme, the spelling rule is to use an /s/ or /es/, not a /z/ to nouns and /s/ to verbs.

Minimal pair is a description of a sequence of speech sounds, not conventional spellings. The phonemes may be exactly the same, but the spellings can vary widely. However, this is a phonemic awareness skill, so it is only presented auditorally. Children are asked to listen for the difference between words that only vary by one phoneme. Activities should proceed from broad differences between phonemes (*cut* vs. *mutt*) to finer ones (*leaf* vs. *leave*). Vowels as well as consonants should be used. The information from Chapters 2 and 3 is helpful in making up minimal pairs by varying voicing (*this/thin*), place of articulation (*hop/hot*), tongue placement for vowels (*put, pat, pet*), etc.

Aspirated consonants explain some of the later spelling confusions that we see in children's writing. The phonemes /k/, /p/, and /t/ can be produced two ways - aspirated or un-aspirated. When they are aspirated a small puff of air accompanies the sound. You can feel it in the palm of your hand in words like *key* and *pony*. You do not hear this (or feel it) in words like *sick* or *top*. These three phonemes are aspirated only at the beginning of stressed syllables. At the end of

words or in unstressed syllables these phonemes sound like their voiced cognates /g/, /b/, and /d/. When you are listening for phonemes in words these three may sound different in different contexts. Children pick this up when they are spelling phonetically later in their development. Some students write *sgol* for *school* and *tob* for *top*, signals that they are phonemically aware of the un-aspirated sound and selecting the voiced cognate to spell it. Keep in mind that the aspiration will occur in the stressed syllable, which is the second syllable in the case of *baton* or *cartoon.*

IMPLICATIONS FOR EMERGENT READERS

Emergent readers benefit from the teacher's knowledge of phonology. When early reading skills are taught as seeking a way to find and use the "code of reading," students react favorably to the many linguistic rules they must acquire. Typical students learn to become metalinguistic and think about how their language works for them and what they do when they hear it or read it or write it. Knowing that there are rules and sequences that can be applied greatly improves their ability to decode and eventually spell words. Minimal pair is a confusing concept for many of them as they are so meaning conscious. Many of the PA activities defined in this section must be directly taught to emergent readers so they can apply the principles themselves. The available PA assessments rely heavily on the development of these phonology skills to measure readiness for direct instruction in reading.

IMPLICATIONS FOR SPECIAL POPULATIONS

Students with special needs will require careful direct teaching to master the rules, patterns and sequences. An important aspect of their training will be a consistent message that the rule system is stable, predictable, and consistent in that sounds do not change, though alphabet patterns vary in their usage. The sound-to-symbol code the student learns well is a dependable foundation that reliably supports higher-level reading skills. Students with moderate to severe disabilities and students with hearing impairments can benefit from careful focus on the rules of phonology presented at a carefully controlled rate and including additional multi-modality task presentation.

ROLE OF THE SLP

The SLP has a critical role in determining the student's abilities and needs in his comprehension and use of the phonological rules, patterns and sequences. The SLP is a resource to the classroom teacher in developing interventions and classroom instruction that will establish the auditory aspects of readiness required to provide a reliable foundation necessary for true comprehension of the sound-to-symbol code.

As the reading teacher is typically comfortable with the syllable and word level, the SLP can offer the lead in teaching at the level of phonemes. For example, teaching minimal pairs requires a progression from a wide scale to a narrow scale, an abstraction with which reading teachers are often unfamiliar. Additionally, knowledge of phonemic rules and patterns may allow the SLP to target the specific phonological difficulties a student may bring into the reading classroom. The SLP, working with the classroom teacher at the level of the early reader, can stress the importance of developmentally appropriate, sequenced tasks that provide for active manipulation of oral language. Together, the SLP and the teacher can provide modeling, demonstration, manipulative tasks, and movement to teach patterns and sequences, with gradual introduction of print and print activities.

THREE SAMPLE ACTIVITIES

The following activities may be most useful in working with early elementary students, but are easily adapted for older students who have experienced difficulties is establishing early reading skills. These tasks are auditory and do not incorporate graphic or print components. They are generally enjoyable for students at varying competencies in the classroom.

1. Have two students stand together, each representing a sound, for example Child #1 is /m/ and Child #2 is /e/. Have the students say the sounds in correct order. A third student is then given a sound and sent in to replace someone. For example, Child #3 may be /b/ and sends the /m/ away, thereby changing the word. Discussion of single phoneme differences as they impact sound and meaning can be explored, as these aspects of minimal pairs can be confusing and require attention. The activity can include expanded groups of sounds as the competencies of the students develop.

2. Provide a name game in which each child has a turn to think of one word within a category; for example, think of things in the classroom (nouns) or actions (verbs). Say *one* _____ (i.e., *chair*) to prompt a singular word. The child then gives the plural form of the word *chairs* and tells whether it sounds like /s/ or /z/ when the word is in its plural form. The students then discuss how the word ending feels and sounds in its singular form and how it feels and sounds when the plural word is formed. This activity provides an opportunity to focus on the final sounds in terms of voicing.

3. Provide practice with aspirated phonemes /k/, /p/, and /t/ by presenting word pairs which contain a phoneme in its aspirated and non-aspirated form in the initial position, and have each student identify which of the words provide the puff of air that accompanies the sound. Discuss the other word and its lack of accompanying puff of air, and contrast the two variations of the same sound. This activity can be progressively developed to incorporate all three phonemes in combination, depending on the students' level of competency.

pat	tap
pit	tip
nap	pan
might	time
cat	tack
tuck	cut
pack	cap
can	knack
tea	eat
peek	keep
back	cab
tab	bat

Chapter 6

Phoneme Variations:
Using The Structure To Support Reading

Phoneme awareness is the foundation for reading and spelling, but it is not the whole structure. PA supports reading the written code of language; however, it requires that reading and writing skills be directly taught to students. Teaching phonemic skills comes first. Students must master them before going on to the **orthographic** phases of reading that focus on letter names, letter forms, and the "other half" of the code.

This chapter will provide more explicit skills that connect phoneme variations with early literacy. This foundational work in phonological awareness strengthens the students' grasp of sounds before the complications from letter names, and spellings. A strong phonological base enables a student to eventually handle the arbitrariness of grapheme to phoneme mapping described in Chapter 5. If the sounds of a language are taught as constant and predictable, then the decoding (grapheme-to-phoneme) tasks ahead are surmountable. Finally, this same strong base will assist the student in recoding (phoneme-to-grapheme) that is required for spelling. These phonological skills are introduced and reinforced at an early stage in reading. Later, they are revisited when the student can bring some prior knowledge, more personal experience, and greater vocabulary to the activities. This makes word recognition easier and faster. Thus, phonological skills build automaticity and fluency in reading as well.

This section addresses important skills in:

- Flapping of medial /t/ and /d/
- Vowel reductions to schwa
- Permissible sequences
- Chunking

Flapping of medial /t/ and /d/ occurs naturally in the spoken language. The tongue simply flaps against the alveolar ridge with no discernable difference

between the phonemes. This can be heard in the words *letter, fighter, writer, and little*, and *pudding, fading,* etc. The flap phoneme sounds closer to the /d/ than the /t/ no matter what letters are used. The flap occurs between two vowels if the second vowel is not stressed. Listening for sounds within words, one of the more advanced phonemic skills, requires SLPs and teachers to recognize the flap and not insist they hear a /t/ phoneme or that the child produced an artificial one.

Many **vowels are reduced to the schwa** /ə/ phoneme when we say them in running speech. This is not surprising when we note the schwa is the most commonly spoken vowel in English, occurring more than 20% of the time (Moats, 2000; Yule, 1996). It is the easiest vowel to produce with the least tension in the jaw and tongue and holds the neutral position in a tense to lax listing of vowel sounds in English (see Chapter 3 on vowels). The schwa phoneme can be represented by every set of vowel letter patterns. Vowels are reduced to the schwa in unaccented syllables; therefore, this variation occurs in words of more than one syllable. For example, you can hear the difference as the schwa replaces the /e/ phoneme in the word "compete" when it is no longer the stressed syllable in the form *competition.* The schwa reduction is notable in common words such as *about, around, upon,* and *beautiful*. It is important for SLPs and teachers to know the high percentage of /ə/ phonemes in words so they don't intentionally distort the phonemes in sound-play activities.

In every language, there are only **certain permissible sequences of phonemes**. In English, there are sound sequences – not spelling sequences – that occur only under certain conditions. When words begin with an affricate, glide or nasal phoneme, the following sound is always a vowel. We cannot create words such as "l*chmat* or *ydit*. No words in English can start with /ng/ or have /ng/ in the beginning blend; no blends can begin with /l/. English limits three consonants at the beginning of a word and they can occur only in certain positions. If there are three consonants, only an /s/ phoneme can be first, followed by a /p, t, k/ followed by a /l, r, w, y/. Not all sequences are acceptable from this list. We can say /spr/ in *spring* but not /spw/ or /stl/, even though they are in the correct order.

As SLPs and teachers work on phonemic manipulations with students, it is necessary to know - and say - that not all phoneme combinations are possible. Each language has the set of sequences they use. If you know that set of sequences, or can recognize when a pattern that is not permissible, you will make better judgments of words and be closer to breaking the "code" to reading and writing.

We all do this when we read and write, and students need explicit teaching in how to make good choices when they eventually decode and encode words.

Chunking is one more excellent example of learning how a language works, and leads naturally into the next chapter on syllables. Recent brain-compatible learning theory (Jenson, 2000) and good instructional practice (McFadden, 1998; Swank, 1999) has highlighted the memory advantage we have when we work with chunks of information instead of individual pieces. Phonological awareness programs are no exception. Learning 44 phonemes and their allophones is much more difficult than learning the common chunks of sounds that are used over and over in words. Listening for parts of words, rhyming words, segmenting words, and re-arranging words or parts of words is much easier if students are taught to hear the chunks of sounds that approximate running speech. In the normal instructional conversation in the classroom, speech comes at students at a tremendous rate.

Normal speech rate produces 10-12 phonemes per second (Blank, Rose, Berlin, 1999). If students are able to chunk these phonemes into meaningful units for speech, they can do the same thing for reading and writing. Listening for chunks of sound (*-ent; - ight, -ow)* is a critical part of phonological awareness and again much easier when it is not complicated by print graphemes. In phonics we teach word families (i.e., *at*, *cat*, *hat*, and *fat*), and students look at the printed word. This added ingredient of spelling means that students will be confused unless they have strong phonological awareness skills. Students would find the list below to be easy for PA training to reinforce chunks, but the same list would be too complex for phonics training to teach word families.

Chunk: long /a/ plus /t/

late
straight
Nat
freight
bait
state
great
Kuwait
eight

IMPLICATIONS FOR EMERGENT READERS

Emergent readers must be taught these skills directly. Because they are not reading on their own, they have not yet come into contact with many of these concepts yet. The teacher has the advantage - and the challenge—of teaching them without print or visual aids. More advanced vocabulary can be used because multiple spellings of the same word chunk does not interfere with the auditory clues. Typical learners can handle the rapid speech rate most of the time but may benefit from a decrease in rate for more complex phoneme strings. General educators are able to teach all children more confidently and deal with the ambiguities of the language when they know these phonology rules.

IMPLICATIONS FOR SPECIAL POPULATIONS

Students with special needs require direct instruction and repeated practice. This practice should occur in a variety of contexts. Rules and their exceptions must be taught in clear and simplistic forms using multisensory techniques. Opportunities for guided practice should occur incidentally throughout the day. Phonological awareness activities should be part of the teacher's established routine within the classroom. All instruction should be introduced in a large group setting within the classroom. Small group instruction may be required for students with special needs who usually require more intense work with specific skills and activities.

ROLE OF THE SLP

The role of the SLP in teaching phoneme variations will vary, depending on the needs of the child and developmental expectations. This role may include screening, assessment, and remediation. Phoneme variations should be addressed in classroom activities within the language arts curriculum. Involvement of the SLP may be direct or indirect.

Direct

Direct involvement should focus on discrete listening skills. The SLP's knowledge of techniques and strategies for working with students with special needs makes this an ideal situation. As the SLP works with small groups of students, this allows for more individualized practice in a quieter environment. With assistance from

the classroom teacher, stimulus items for therapy should be selected from materials in the general curriculum.

Indirect
Indirect involvement may involve consultation with the child's teacher. This could include provision of information, materials, recommended activities and/or suggested resources. The SLP can also serve as a model within the classroom setting during large group instruction. Students requiring additional assistance can be identified during this time. Note: Improving literacy should remain the focus of therapy.

THREE SAMPLE ACTIVITIES

1. **Vowel reduction to schwa** – Make large cards with vowels and representative pictures for each vowel sound. Make a list of multisyllabic words. Say a word out loud, marking each syllable, have the class repeat the word. Pick a student to represent each syllable in the word and have them stand in the front o f the class with the card representing the vowel sound. Let the remaining students take turns identifying the unaccented vowel that becomes the schwa. Let the students take turns replacing the vowel card with the schwa card. (This is an activity for students who are using derived words.)

2. **Chunking** – The SLP directs a brainstorming activity for words that rhyme with "meat" (example: beet, seat, treat, etc.);
"late" (example: straight, bait, rate, freight)

3. **Flapping of Medial /t/ and /d/** - Make a chart with two lists of words with medial /t/ and /d/ that are very similar in pronunciation, (i.e., putting/pudding, writer/rider). Color-code the list. Find pictures representing each word. These should also be color-coded. Say each word in a sentence and have the students take turns selecting the appropriate picture to match the sentence. Example: The writer is in the class. The rider is on the bike. The color-coding allows students to visualize correct/incorrect responses. Caution: This activity includes writing and spelling and should be used with older students at a later stage.

Chapter 7

Phoneme Combinations - Making Syllables

Syllables in a spoken language are any basic units of uninterrupted sound that can be used to make up words. We speak in syllables. We speak in clusters of phonemes arranged around a vowel. In reading, we explain that a syllable is a word or word part that has one, and only one, vowel sound. It is this vowel that gives the word or word part its single uninterrupted sounding of the voice. Teachers and SLPs must have an explicit understanding of the syllable structure of English in order to teach it to all of their students.

Syllables may be simple or complex. A *simple syllable* is a vowel alone or a vowel with a consonant before or after it. *Complex syllables* have other configurations of consonant phonemes before and after the vowel. There is always only one vowel phoneme (although there could be two vowel letters or graphemes) because there is only one vowel sound. Reading instruction typically identifies six syllable types, which reflect the orthographic spelling of syllables. They are listed below with brief descriptions.

A small number of common words do not fit into the syllable structure and must be memorized as "outlaw words" or "red words" or "rulebreakers" to help students deal with them early in the phonics process. They are simply included in the auditory processes used in phonological awareness. These words are *the, to, do, who, what, was, whom, again, against, says, said, been, of, from, son, month, front, some, love, other, money, among.*

In the PA training, Moats (2000) suggests that we consider syllables phonemically in 13 syllable structures. The complex clusters are more difficult for children to hear, repeat, and read on their own. Phoneme awareness is different in a six consonant cluster than it is in a one- or two-consonant, open syllable. Moats contends that the consonants are "stuck tightly together in articulation" (Moats, 2000, p. 52) and the duration of the phonemes is shorter. Phoneme awareness of these clusters is closely linked to the direct instruction of first grade. The complexity of syllable structure must be considered in phoneme awareness,

decoding, and spelling activities for students. For example, the word *crust* is not simply a word with more phonemes than *cut*; it is linguistically much more difficult to pronounce, manipulate, and learn. The word *crust* is a CCVCC (consonant, consonant, vowel, consonant, consonant) structure, with 5 phonemes to hear and restate, compared to 3 phonemes in the CVC structure of *cat*.

Type	Description	What Happens	Examples
Closed syllables	**one vowel followed by one consonant**	**the vowel sound is short**	**hot, hunch**
Open syllables	**one vowel only**	**the vowel sound is long**	**I, he, table**
Silent or magic E	**ends in a letter E** **has one consonant before E** **has one vowel before consonant**	**The first vowel is long, the e is silent**	**cake, slate** **slice, replace,** **decide**
Vowel teams	**a cluster of 2-3 vowels with one sound**	**the vowel pronunciation varies from a new sound, to a dipthong, to a long or short sound of one of the vowels**	**coat, steak** **plow, deploy** **cook, food** **bread**
Vowel-R	**one vowel followed by letter R** **one vowel followed by letter R and one consonant and final E** **one vowel and two R's** **one vowel, one R and another vowel**	**the vowel sound is modified by the R**	**car, corn, fur,** **large** **arrange** **arid, oral, plural**
Consonant LE	**consonant followed by LE.**	**the E is silent, but the sounded vowel is a schwa generally considered to be between the two consonants**	**maple, fable**

The phoneme structure of syllables follows:

V	a
CV	he
VC	out
VCC	oats
CVC	book
CCV	stay
CCVC	broke
CVCC	desk
CCVCC	stamp
CCCVC	scrape
CCCVCC	streets
CCVCCC	sparks
CCCVCCC	scrimped

The thirteen (13) levels in the above chart all reflect only one-syllable words. Students learning syllables need to be introduced to these levels of complexity with care and forethought. Exercises should be planned to gradually increase the difficulty of the syllable structure without regard for spelling - only the phonemes (sounds).

Syllables also have an internal structure. They are more than just strings of phonemes. Each syllable as an *onset* - what comes before the vowel, and the *rime* - what follows it. While words always have a rime, they may not have an onset - such as *egg* or *in* or *old*. The word may begin with a vowel phoneme. The vowel belongs to the part of the rime called the *peak*. The peak has the greatest amount of resonance - it is loudest. The *coda* is the remaining part of the rime. It has less acoustic energy. In the word *flute*, the onset is /fl/ and the rime is /ut/. The peak of the rime is /u/ and the /t/ is the coda. Because the coda is less intense, some students have a difficult time hearing or remembering the coda. They leave it out when repeating sounds or writing words. If the rime includes the liquid consonants /l/ or /r/, they blend with the peak, instead of falling away as a coda. They attach to the peak. This is important when students are writing or spelling words with liquid codas. They often confuse the order of the letters. The word *girl* is written as *gril* or *bird* as *brid*. This is a signal of good phonemic processing. The coda is merged with the peak, and the student is indeed "sounding it out." This

is what s/he hears. This is why it is important to teach the "r-controlled vowels" in phonics and what spelling rules go with it.

Finally, English does not have vowel tones, but it does have phrase or word stress to help clarify meaning. In the following sentences, the meaning changes when a different word is stressed.

I wanted him to bring the picture.
I wanted him to bring the picture.
I wanted him to bring the picture.

Stress occurs on nouns, verbs, and adjectives/adverbs that carry the central meaning. Students need to listen for stress, correctly repeat phrases or sentences with stress, and change stress to change meaning. These activities are also part of phonological awareness and tie the suprasegmentals into the child's preparation for reading. Students who cannot ascertain stress patterns often miss the unstressed syllables and words and have word recognition problems, reduced **automaticity**, weak decoding skills, and reading comprehension problems.

IMPLICATIONS FOR EMERGENT READERS

This section asks the educator to look at syllables from a phonological (sounds) viewpoint rather than an orthographic (letters) one. The structure of many English syllables includes strings of consonants on both sides of the mandatory vowel. These are difficult for emergent readers to pronounce and/or recall. Syllable confusion is common in emergent readers, decreasing gradually as they become more skilled at hearing the vowel units in words. Many emergent readers do not use or cannot imitate stress patterns in their predictable reading. Decodable texts used in phonics programs do not typically rely upon any stress features. Information in this section about the parts of a syllable are valuable for a teacher to create meaningful lessons or focus on an error pattern, but are not directly taught to students. Knowing about the liquid coda, for instance, is helpful for error analysis of student writing. For some student confusions, PA activities would be appropriate instruction, but not in others. Emergent readers enter a stage of "using, but confusing" these skills, which provides strong signals for the teacher.

IMPLICATIONS FOR SPECIAL POPULATIONS

Students with disabilities often come to school with less vocabulary exposure, than their typical peers. Vocabulary that is acquired through reading is limited in these students due to a lack of proficiency in reading. Students who exhibit a reading disability often do not perceive that English is a code-based language - that each letter represents a sound. For some students, each word is read by sight. What often happens for these students is that they progress through school, but their reading abilities are capped at the 2nd or 3rd grade level because they have reached the capacity of their memory. They have no other strategies for decoding words. Whereas most students without disabilities can simply intuit the hierarchy of reading skills and apply decoding strategies automatically.

Students with disabilities often lack the ability to distinguish the boundaries between sounds. For these students instruction in phonological awareness is essential, regardless of age. Oral instruction in recognizing where one word begins and the other ends should be followed with instruction in recognition of syllable boundaries. Students with difficulty in reading must be provided direct instruction in decoding strategies that include phonics, syllables, roots, affixes, and memorization of sight and frequency words. They must strive to recognize the patterns of syllables and apply the rules, instead of trying to memorize every word as a distinct unit.

ROLE OF THE SLP

Direct

SLPs and teachers can directly instruct students who struggle with syllable awareness in class, in pull-out speech and language sessions, and in collaborative classroom programs. Students who struggle with syllable awareness are often poor spellers and writers.

Indirect

SLPs can provide suggestions and activities to teachers to use in the classroom. Students can write, using inventive spelling, and the SLP and the teacher can review their work and determine which syllable patterns they are using but are confusing.

THREE SAMPLE ACTIVITIES

1. For a student who has difficulty recognizing the number of syllables in words, the student can cup his chin with his whole hand and feel the number of times his chin drops. The number of chin drops shows the number of sounded vowel sounds – syllables. Try this with these words: *table, October, desk, cupcake.* This is called the *chin-drop method*.

2. Similar to a *Simon Says* activity, the student must take as many steps forward as there are syllables in a word. If too many or too few steps are taken, a one-step backward penalty applies. This activity may be done with the teacher or students calling out a word. The game can be won by the first to reach the front. Another variation is to plan the activity so that everyone comes out even in the front.

3. Say a word from the student's curriculum or vocabulary list. Students must count the number of vowels. The number of sounded vowels indicates the number of syllables. The student then holds up the correct number of fingers. The number of syllables can be determined with the *chin-drop method*.

Chapter 8

Assessment of Phonological Skills

Phonological assessment of all the consonants can be assessed by formal and informal measurements. A child with great difficulties in producing consonants may be difficult to understand, while a formal articulation test may be utilized to determine the student's ability to produce phonemes, the test will not ascertain if his or her PA skills are developed. Children with dysarthia or apraxia of speech may have intact PA skills.

Informally the SLP will be able to listen to a child read and recognize the problem he may be having with consonant sounds, such as using a voiced consonant in place of an unvoiced one (*bubby* for *puppy*). Typically, students who struggle with phonics and decoding strategies also have underlying confusion of the phonemes these letter patterns represent. Asking the student to listen and repeat a word or part of a word, and then manipulate the consonants, is a better assessment than continued reliance in the print or spelling patterns.

Assessment of phonology is typically accomplished with a combination of formal, commercially developed standardized measures and informal, non-standardized measures. Often, informal data provides most useful information to develop intervention. Information gathered from direct observation of the student's reading and a review of speech and writing samples can be most revealing in developing a focused intervention plan. Asking a student to read a familiar, and then an unfamiliar, text during a speech therapy session can provide the SLP with a short assessment of a student's reading fluency and skills.

ASSESSMENT TOOLS

Lindamood Auditory Conceptualization (LAC), This test allows the student to use colored blocks, which are manipulated by the student to represent phonemes heard in words.

Test of Phonological Awareness TOPA (K-2) measures young children's awareness of the individual sounds in words.

Comprehensive Test of Phonological Processing (CTOPP) ages 5-0 though 24-11.

The Phonological Awareness Test by LinguiSystems; however, it should be noted that graphemes are used in this assessment instrument.

The *Phonological Awareness & Reading Profile* by LinguiSystems is a criterion-referenced measure to pinpoint specific skills as well as a way to plan remediation. The sections entitled Decoding & Spelling include vowel sounds. Co-articulation affects of sounds preceding as well as sounds occurring after the vowel sound, should also be looked at in the assessment of the student's phonological awareness of vowel sounds. The student's problem may be that he or she may not understand the concept of co-articulation, and this would need to be taught to him in the therapy session.

Chapter 9

Final Comments- Next Steps

Reading is possible because there is a speech-to-print correspondence. In English, that correspondence is not a direct matching of one sound to one letter. The correspondence may seem puzzling at times, or even inconsistent; but it is there. Reading and spelling are strongly rule-governed. This booklet has highlighted the speech-print patterns in each chapter. Because of the puzzling nature of written English - using both phonemic (sound) and morphologic (meaning) elements- learning to read is more complex than it appears to those who already read.

Teaching reading requires the educator to know that other readers have forgotten what they once had to learn. Reading becomes automatic, and the reader can no longer analyze why s/he decodes quickly and accurately most of the time! Teaching students in special populations to read is even more complex. Finally, students with communication disabilities struggle with the essential speech/language component of the speech-to-print connection that represents reading. Their educators must know exactly how reading "works" and how to teach it clearly and directly.

This booklet was designed to address one aspect of the speech to print connection - phonological awareness (PA). By understanding PA and teaching it directly, speech language pathologists and their educational partners can be sure that students have the basic foundation for reading. It is not enough to "hear or say the sounds". The young reader must be able to recognize a single phoneme (sound) in any word s/he hears, sees, or wishes to write. The young reader must know the small differences between the 44 sounds. Only then can the reader move on confidently to decoding and spelling. SLPs and educators cannot rely on commercial programs or the alphabet to assure that students with special needs will "pick up" these fine differences and know how to use them when they read and write. For example, using the alphabet sequence for learning the "sounds of the language" would leave out 12 phonemes (Moats, 2000). While typical students can learn a few sounds and generalize to all the others, students with special needs do not do this easily or spontaneously. Rapid generalization of patterns is not characteristic of students with language disabilities. Teaching PA explicitly- not PA rules- enables

them to link their speech to print. PA helps them become automatic analyzers of the language.

This booklet ends long before the teaching process ends. It ends long before the learning process is over for these students. Rather, it is a first step. A solid foundation of PA skills marks the difference between emergent readers and early readers. SLPs and other special educators have many emergent readers on their caseloads and in their classrooms. PA skills fit within the regular curriculum and are also a part of the individualized education of these children and youth. PA must be assessed to be included on the student's IEP under present levels of performance, goals, objectives, and benchmarks. The SLP and educator who can assess and instruct PA skills explicitly and systematically will be able to provide appropriate services to identified students and measure progress. More students with communication disabilities will become readers and writers.

APPENDIX A

Glossary

alliteration words that has the same initial phoneme

automaticity response or behavior without attention or conscious effort

consonants speech sounds made by partially or completely blocking the vocal air stream

decoding ability to translate a word from print to speech, usually by employing knowledge of sound-symbol correspondences; also the act of deciphering a new word by sounding it out

deep alphabet alphabet that does not use a one-to-one sound symbol correspondence

diphthongs vowels that glide in the middle and the mouth shifts from one vowel position to another

encode change a message into symbols

grapheme a letter or letter combination that spells a single phoneme

metalinguistic pertaining to an acquired awareness of language structure and function that allows one to reflect on and consciously manipulate the language

morpheme the smallest meaningful unit of language

morpho-phonemic a combination of morphemes, the smallest elements of meaning and phonemes (sounds) the smallest elements of speech to assemble words

phoneme the smallest units of sound /s/, /a/, /k/, /m/, /ch/, these are not the same as phonics.

phonemic awareness the awareness that sounds (phonemes) make up words, and the ability to manipulate individual phonemes

phonetic alphabet all of the sounds in the world's languages represented so that speech can be described with a common symbol system.

phonetics the study of the speech sounds in all languages

phonics a system of teaching reading and spelling through sound-symbol relationships

phonological awareness to the awareness of and ability to manipulate sounds in language, in phonics, letters are added and letter sounds are blended to create words

phonology is the study of the unconscious rules governing speech sound production.

rhyme words or syllables that sound the same. It is not related to how the word is spelled (orthography)

rime the part of a syllable that includes a vowel plus the letters that follow it. It is different than the language play activity of rhyming.

schwa a lax vowel formed in the mid central region of the mouth

spelling process of representing language by a means of a writing system or orthography

vowels a class of open, unobstructed speech sounds that are not consonants.

Appendix B

Phonetic Alphabet

/p/	as in pencil	/j/	yell
/b/	book	/r/	read
/t/	tool	/i/	eat
/d/	dog	/ɪ/	it
/k/	cat	/e/	eight
/g/	good	/ɛ/	head
/f/	food	/æ/	had
/v/	vote	/ʌ/	hut
/θ/	think	/ə/	above
/ð/	then	/ɝ/	herd
/s/	saw	/ɚ/	herder
/z/	zoo	/u/	hoot
/ʃ/	ship	/ʊ/	hood
/ʒ/	measure	/o/	hoe
/h/	hint	/ɔ/	haul
/ʧ/	chocolate	/ɑ/	hot
/ʤ/	gym	/aɪ/	high
/m/	mind	/aʊ/	how
/n/	nice	/ɔɪ/	toy
/ŋ/	sing	/jʊ/	you
/l/	lime		
/w/	weather		

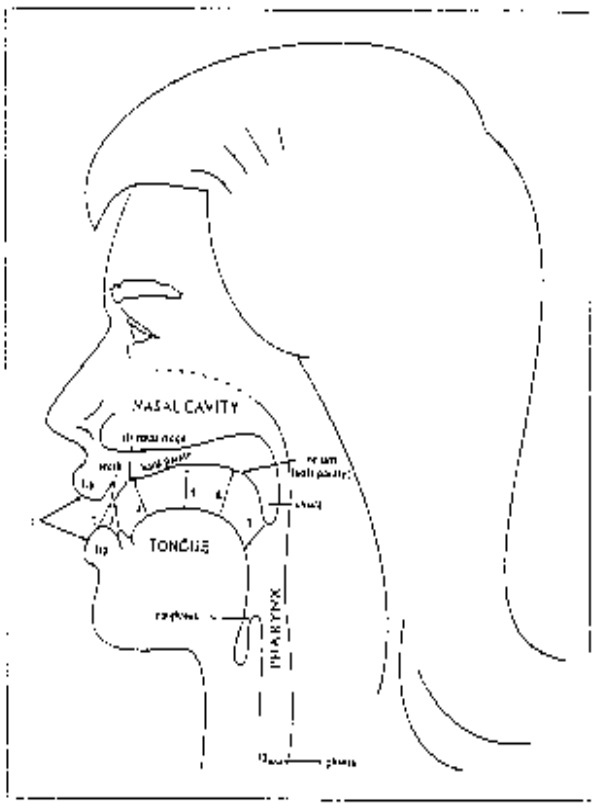
Appendix C

PHONOLOGICAL AWARENESS SKILL SEQUENCE

Skill	Example	Typically Mastered
Word		
Isolating words in sentence	She/ is/ a/ good/ player.	Preschool
Rhyme		
Recognition	Does *glass* rhyme with *pass*	Preschool
Production	What rhymes with *blue*	Kindergarten
Syllable		
Blending	*pan* + *cake* = *pancake*	Preschool
Segmentation	swim/suit	Kindergarten
Deletion	Say *hotdog* without *hot*	Kindergarten
Phoneme		
Isolation of initial/final sound	What is the first sound in *fox*	Kindergarten
Blending	What am I saying? *f-ence*	1st grade
Complete segmentation	What are the sounds in *bag*	1st grade
Manipulations of sounds		
Addition	Add /t/ to *an*	Kg-1st grade
Deletion	Say *meat* without/m/	1st grade
	Say *play* without /p/	2nd grade
	Say *play* without /l/	3rd grade
Substitution	Say *yard* and instead of /y/ say /h/	1st - 3rd grade
Transposition	*wristwatch* becomes *watchwrist*	1st - 3rd grade
	Spot to *stop*	
	What is changing each time?	

APPENDIX D

Place and Manner for Articulation of Phonemes



1. bilabial
2. labiodental
3. interdental
4. alveolar
5. alveopalatal
6. velar
7. uvular
8. glottal

APPENDIX E

VOWEL CHART

Moats, L.C., (2000). The Structure of English Orthography. Speech to Print: Language Essentials for Teachers (p. 94). Paul H Brookes Publishing Co. Reproduced by permission of the publisher.

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APPENDIX F

Materials

This list of materials is by no means all inclusive. These are some of the materials used by the speech language pathologists in the state. In addition to the materials listed below, thousands of materials or activities can be found on the internet. Type in phonological awareness or phonemic awareness.

Adams, M.J., Foorman, B., Lundberg, I., and Beeler, T. Phonemic Awareness in Young Children: A Classroom Curriculum. Brookes Publishing Co., This series of carefully sequenced activities will stimulate phonological awareness in 15-20 minutes of teacher-led activities each day. It is most appropriate for kindergarten children, but could also be used with at-risk children in first grade. It is an excellent program with careful instructions for teachers to follow.

Catts, H. and Olsen, T. Sounds Abound. LinguiSystems, This spiral bound notebook contains numerous activities that a kindergarten teacher can use to stimulate phonological awareness in young children. It is not a systematic curriculum, but a set of instructional activities. The *Sounds Abound Game* with a game board and question cards provides opportunities for children to practice skills in sound comparison, blending, deletion, and segmenting in small groups.

Erickson, G., Foster, K., Foster, D., and Torgesen, J. Daisy Quest and Daisy's Castle. PRO-ED. These computer programs require a Macintosh computer as a platform. Several research studies have shown their effectiveness in stimulating phonological awareness in young children from preschool through first grade.

Fitzpatrick, J. Phonemic Awareness: Playing with Sounds to Strengthen Beginning Reading Skills. Creative Teaching Press. Help your students learn to read by teaching them how to "listen to language." Before children can understand printed words, they need to hear and manipulate letter sounds. Phonemic Awareness is a complete resource book that includes over 90 interactive activities, reproducible manipulatives, picture cards, and word lists to help children connect oral language to written text. This book also includes a complete program overview with important facts about phonemic awareness to help you guide your students' language development.

Goldsworthy, C. Sourcebook of Phonological Awareness Activities – Vol. I: Children's Classic Literature, 1998. Singular Publishing Company. This book provides superb phonological awareness activities at the word, syllable, and phoneme level Includes practical materials that retain the richness of children's literature Describes a rationale for inclusion of phonological awareness training into emergent literacy and early reading activities Enables clinicians to "pick up and run" with highly appropriate and easy-to-use program materials Includes techniques for adapting existing reading materials for use in phonological awareness training.

Goldsworthy, C. Sourcebook of Phonological Awareness Activities – Vol II: Children's Core Literature. 2001. Singular Publishing Company. This book includes training materials to be used by you with popular books such as The Hungry Caterpillar and Brown Bear Brown Bear. Dr. Goldsworthy also introduces you to the concept of phonological awareness and its relationship to reading skills. This product will assist you in building critical phonological and reading skills in children.

Lazzari, A.M. and Peters, P.M. HELP: Handbook of Exercises for Language Processing. LinguiSystems, Inc., 1987. The look and content of these activities appeal specifically to your elementary-aged students. The no-frills, ready-to-use approach fits your precious time. These worksheets are perfect for oral or written practice. Help students improve question comprehension, association, specific word finding, grammar, and more.

Lenchner, O. and Podhajski, B., Sound Start: Teaching Phonological Awareness in the Classroom. Stern Center for Language. This is program that offers a variety of game-like activities to be taught in a prescribed sequence. It starts with rhyme activities and ends with the activities involving letter sounds and simple reading and spelling tasks. The kit comes with a set of picture cards and other materials to be used in the games, and it also includes a videotape that demonstrates some of the activities.

Lindamood, P. and Lindamood, C. Auditory Discrimination in Depth. PRO-ED Powerful program for stimulation of phonological awareness and transition into decoding written language. Requires special teacher training for maximal effectiveness.

Robertson, C. and Salter, W. The Phonological Awareness Kit – Primary (Ages 5-8) . LinguiSystems, Inc., 1995. The kit uses a multisensory approach to ensure success for all learning styles. Get activities for direct instruction of rhyming; segmenting sentences, words and syllables; identifying sound placement in words; and blending sounds to make words. This flexible program is great for individual therapy, small group instruction, or large group training.

Robertson, C. and Salter, W. The Phonological Awareness Kit – Intermediate. (Ages 9-14) LinguiSystems, Inc., 1997. This kit gives older students strategies to crack the reading code with this comprehensive program. Great for students with deficits in auditory processing, decoding, and written language. The manual gives you easy-to-follow, developmentally-sequenced activities with IEP goals.

Spector, C. Sound Effects: Activities for Developing Phonological Awareness. (1999). Thinking Publications. This resource features well-written, purposeful materials to help develop metaphonological-or phonological awareness skills-in the older student. Spector has created activities that use phonological humor in a unique way to help build metaphonological skills, as well as other metalinguistic skills.

Torgesen, J. and Bryant, B. Phonological Awareness Training for Reading, PRO-ED Publishing. This program is suitable for small group instruction and requires minimal teacher training to use. Two research studies show its effectiveness in stimulating phonological awareness in at-risk children.

Wasowicz, J. Earobics®. Cognitive Concepts, Inc., With over 300 levels of instruction, this CD Rom based software provides comprehensive training in "auditory processing," phonological awareness, phonics and spoken language processing. Earobics Step 1 is for developmental age 4-7, Earobics Step 2 is for developmental ages 7-10, and Earobics 1 for Adolescents and Adults is for older struggling readers. Home and Specialist/Clinician versions are available.

Yopp, H. and Yopp, H. Oo-pples and Boo-noo-noos (Grades Pre-K-3) Teaching Resource Center. This book and tape can help you create a linguistically stimulating environment for children. It provides teachers with activities and songs that encourage active exploration of sounds.

Appendix G

Informal Assessment of Phonological Awareness

Resource: Empire Union School District (Adapted from Lake Elsinore Unified School District)

Score Sheet

Student_____Grade____Date_____Teacher_____

TASK	Pre Score	Post Score
1. Hears separate words in speech		
2. Recognizes rhyming words		
3. Hears syllables in words		
4. Generates rhyming words		
5. Blends onset and rime		
6. Blends individual phonemes		
7. Isolates Phonemes		
• Isolates initial phonemes		
• Isolates final phonemes		
• Isolates middle phonemes		
8. Segments individual phonemes		
9. Manipulates phonemes		

Scoring Criteria

* Record the number of correct responses for each activity on the student profile
* Children who can perform at least 4 out of 5 stimulus items correctly on a particular activity may be considered to have adequate phonological awareness on that type of task.

Instructional Implications

Children who perform below this criterion on any one activity may benefit from explicit phonological awareness instruction on that type of task.

Informal Assessment of Phonological Awareness

1. Hears separate words in speech

Directions: ***I am going to say something. Repeat what I say but say each word one at a time. Let me show you.*** Say: ***I see two cows.*** Then say the sentence again, one word at a time. ***I..see..two..cows.*** Now have the child say the sentence one word at a time with you. Additional practice examples: *We can skate fast!* or *My brother plays soccer.* Say: ***Now you try these. Listen, then say the sentence one word at a time.***

Make a check mark over each word the child says individually.

Item	**Response**	**+/0**
This cat is my pet.	This cat is my pet.	
Tom likes riding his bike.	Tom likes riding his bike.	
Will we have pizza for lunch?	Will we have pizza for lunch?	
They went to Disneyland today!	They went to Disneyland today!	
Sit in your chair!	Sit in your chair!	

2. Recognizes Rhyming Words

Directions: ***I'm going to say two words and ask you if they rhyme. Listen carefully. Dog rhymes with log. Does big rhyme with pig?***
Practice a few more examples. If it seems necessary, explain that rhyming words sound the same at the end. Demonstrate some pairs of words that do NOT rhyme **bike/toy, rock/bird.** Additional practice items: ***Do these words rhyme?***
book/look - bag/rock

Item	Response (yes or no)	+/0
1. ball/tall (Do they rhyme?)		
2. fox/box		
3. sing/sat		
4. yes/toy		
5. jeep/sheep		

3. Hears syllables in words

Directions: ***I am going to say some words slowly. Clap to show me the parts or syllables you hear in each word. Let me show you.*** Say: ***bike...bike*** (Clap once as you say ***bike***) Say ***apple...ap ple (***Clap twice as you say ***ap - ple***)
Now say the word and clap with me: ***ap ple*** (Child claps also) Say: ***dinosaur***
Now say the word and clap with me: ***di no saur*** (student clapped for each syllable correctly) di - (nosaur) (student clapped only once for entire word). Additional practice examples: ***man, football***
Say the word and clap the parts.

Item	**Response**	**+/0**
1. paper	pa - per	
2. dog	dog	
3. Halloween	Hal - low - een	
4. tree	tree	
5. table	ta - ble	

4. Generates rhyming words

Directions: ***I'm going to say a word and I want you to tell me a word that rhymes with it. Rhyming words are the words that sound alike at the end.*** Present a few examples of rhyming word pairs: ***sat-rat, fish-wish, fox-box.*** Say that the words rhyme because the last parts of them sound alike. Then, present some word pairs that do NOT rhyme: ***cat-pig, dish-cow, fox-fast***. Say that these words do not rhyme because they do not sound alike at the end. Say: ***Now you try it with me. Tell me a word that rhymes with fat.*** (nonsense words are okay) Additional practice examples: ***pot - loose***

Item	**Response**	**+/0**
1. can		
2. fell		
3. sight		
4. rake		
5. sun		

5. Blends onset and rime

Directions: ***Im going to say the sounds of a word. Listen to the sounds and put them together to make a word.*** Say these sounds with a very short pause between them. **/b/ /at/** ***What word did I say?*** (***bat***) Additional practice examples: ***/s/ /ink/ (sink), /m/ /ake/ (make)***
Say: ***Let's try some more.***

Item	**Response**	**+/0**
1. /d/ .. /ay/	(day)	
2. /f/ .. /ish/	(fish)	
3. /s/ .. /ide/	(side)	
4. /c/ .. /oat/	(coat)	
5. /t/ .. /all/	(tall)	

6. Blends individual phonemes

Directions: ***I'm going to say the sounds of a word. Listen to the sounds and put them together to make a word.*** Say these sounds with a very short pause between them. ***/s/ /i/ /t/. What word did I say?*** Additional practice examples: ***/u/ /p/ (up); /m/ /o/ /m/. (mom)***
Say: ***Let's try some more.***

Item	**Response**	**+/0**
1. /m/ /ai/ /l/	(mail)	
2. /s/ /t/ /o/ /p/	(stop)	
3. /p/ /e/ /n/	(pen)	
4. /d/ /a/ /d/	(dad)	
5. /g/ /oa/ /t/	(goat)	

7. Isolates initial, final, and middle sounds

*** Initial Sounds** Directions: ***I'm going to say a word and I want you to tell me thebeginning or first sounds of the word.*** Say: ***Cat.*** Then ask, ***What's the beginning sound of cat? (/k/)*** Additional Practice Examples: ***gate, monkey***

Item	**Response**	**+/0**
1. like	/l/	
2. puppy	/p/	
3. fat	/f/	
4. soup	/s/	
5. animal	/a/	

*** Final Sounds** Directions: ***I'm going to say a word and I want you to tell me the ending or last sound of the word.*** Say: ***Cat.*** Then ask, ***What's the ending sound of cat? - /t/*** Additional Practice Examples: ***log - skate***

Item	**Response**	**+/0**
1. rat	/r/	
2. log	/g/	
3. horse	/s/	
4. path	/th/	
5. truck	/k/	

*** Middle Sounds** Directions: ***I'm going to say a word and I want you to tell me the middlesounds of the word. Listen carefully.*** Say: ***Cat.*** Then ask, ***What's the middle sound of cat? /a/*** (short vowel sound). Additional Practice Examples: ***sip - game***

Item	**Response**	**+/0**
1. seed	/e/	
2. cup	/u/	
3. rip	/i/	
4. boat	/o/	
5. end	/n/	

8. Segments individual phonemes

Directions: Say: ***Now we're going to play a word game. I'm going to say a word and I want you to tell me each sound you hear in the word. Let me show you.*** First say the word naturally. Then practice the word with the child. stretching the sounds. Do not separate the sounds. Say: ***Old.*** Listen while I say it slowly. ***/o/ ... /l/ ... /d/*** Now say it slowly with me. ***/o/ ... /l/ ... /d/*** Model until the child seems to understand the task. Additional practice examples: **read – man.** ***Let's try some more. What sounds do you hear in these words?*** Say each word naturally. Circle the sounds the child correctly articulates.

Item	**Response**	**+/0**
1. up	u p	
2. it	i t	
3. leaf	l e f	
4. back	b a k	
5. stop	s t o p	

9. Manipulate phonemes

Directions: ***I'll say some words. I want you to put them into a secret code by separating out or combining the sounds.*** For example, if I say ***man,*** you say ***/m/ /a/ /n/.*** If I say ***dog,*** you say ***/d/ /o/ /g/.*** Additional practice examples: Say: ***/g/ /o/*** - (Child says ***go***; Say ***baby*** - Child says ***/b/ /a/ /b/ /y/.*** Say: ***Let's try some more.***

Item	**Response**	**+/0**
1. it	/i/ /t/	
2. /l/ /a/ /b/	lab	
3. vest	/v/ /e/ /s/ /t/	
4. 4. /j/ /u/ /s/ /t/	just	
5. knock	/n/ /o/ /k/	

APPENDIX H

Louisiana's English Language Arts Content Standards

Grades K-4

Standard One **Students read, comprehend, and respond to a range of materials, using a variety of strategies for different purposes.**

ELA-1-E1 Gaining meaning from print and building vocabulary using a full range of strategies evidenced by reading behaviors while using the cuing systems;

ELA-1-E2 Using the conventions of print;

ELA-1-E3 Adjusting speed of reading to suit the difficulty of materials and the purpose for reading;

ELA-1-E4 Identifying story elements and literary devices within a selection;

ELA-1-E5 Reading, comprehending, and responding to written, spoken and visual texts in extended passages;

ELA-1-E6 Interpreting texts to generate connections to real-life situations;

ELA-1-E7 Reading with fluency for various purposes.

Standard Two **Students write competently for a variety of purposes and audiences.**

ELA-2-E1 Dictating or writing a composition that clearly states or implies a central idea with supporting details in a logical, sequential order;

ELA-2-E2 Focusing on language, concepts, and ideas that show an awareness of the intended audience and/or purpose in developing compositions;

ELA-2-E3 Creating written texts using the writing process;

ELA-2-E4 Using narration, description, exposition, and persuasion to develop compositions;

ELA-2-E5 Recognizing and applying literary devices;

ELA-2-E6 Writing as a response to texts and life experiences.

Standard Three **Students communicate using standard English, grammar, usage, sentence structure, punctuation, capitalization, spelling, and handwriting.**

ELA-3-E1 Writing legibly;

ELA-3-E2 Demonstrating use of punctuation, capitalization, and abbreviations in final drafts of writing assignments;

ELA-3-E3 Demonstration standard English structure and usage;
ELA-3-E4 Using knowledge of the parts of speech to make choices for writing;
ELA-3-E5 Spelling accurately using strategies and resources when necessary.

Standard Four **Students demonstrate competence in speaking and listening as tools for learning and communicating.**

ELA-4-E1 Speaking intelligibly, using standard English pronunciation;
ELA-4-E2 Giving and following directions/procedures;
ELA-4-E3 Telling or retelling stories in sequence;
ELA-4-E4 Giving rehearsed and unrehearsed presentations;
ELA-4-E5 Speaking and listening for a variety of audiences and purposes.

Standard Five **Students locate, select, and synthesize information from a variety of texts, media, references, and technological sources to acquire and communicate knowledge.**

ELA-5-E1 Recognizing and using organizational features of printed text, other media, and electronic information;
ELA-5-E2 Locating and evaluating information sources;
ELA-5-E3 Locating, gathering and selecting information using graphic organizers, simple outlining, note taking, and summarizing to produce texts and graphics;
ELA-5-E4 Using available technology to produce, revise, and publish a variety of works;
ELA-5-E5 Giving credit for borrowed information by telling or listing sources;
ELA-5-E6 Interpreting graphic organizers.

Standard Six **Students read, analyze, and respond to literature as a record of life experiences.**

ELA-6-E1 Recognizing and responding to United States and world literature that represents the experiences and traditions of diverse ethnic groups;
ELA-6-E2 Recognizing and responding to a variety of classic and contemporary literature from many genres;
ELA-6-E3 Identifying key differences of various genres.

Standard Seven **Students apply reasoning and problem-solving skills to their reading, writing, speaking, listening, viewing, and visually representing.**

ELA-7-E1 Using comprehension strategies in contexts;
ELA-7-E2 Problem solving by using reasoning skills, life experiences, and

available information;

ELA-7-E3 Recognizing an author's purpose and point of view;

ELA-7-E4 Distinguishing fact from opinion, skimming and scanning for facts, determining cause and effect, generating inquiry, and making connections with real-life situations.

Grades 5-8

Standard One **Students read, comprehend, and respond to a range of materials, using a variety of strategies for different purposes.**

ELA-1-M1 Using knowledge of word meaning and developing basic and technical vocabulary using various strategies;

ELA-1-M2 Analyzing literary devices and story elements within a selection;

ELA-1-M3 Reading, comprehending, and responding to written, spoken, and visual texts in extended passages;

ELA-1-M4 Interpreting texts with supportive explanations to generate connections to real-life situations and other texts;

ELA-1-M5 Using purposes for reading to achieve a variety of objectives.

Standard Two **Students write competently for a variety of purposes and audiences.**

ELA-2-M1 Writing a composition that clearly implies a central idea with supporting details in a logical, sequential order;

ELA-2-M2 Using language, concepts, and ideas that show an awareness of the intended audience and/or purpose in developing compositions;

ELA-2-M3 Applying the steps of the writing process;

ELA-2-M4 Using narration, description, exposition, and persuasion to develop various modes of writing;

ELA-2-M5 Recognizing and applying literary devices;

ELA-2-M6 Writing as a response to texts and life experiences.

Standard Three **Students communicate using standard English, grammar, usage, sentence structure, punctuation, capitalization, spelling, and handwriting.**

ELA-3-M1 Writing legibly;

ELA-3-M2 Demonstrating use of punctuation, capitalization, and abbreviations;

ELA-3-M3 Demonstrating standard English structure and usage;

ELA-3-M4 Demonstrating understanding of the parts of speech to make choices for writing;

ELA-3-M5 Spelling accurately, using strategies and resources when necessary.

Standard Four **Students demonstrate competence in speaking and listening as tools for learning and communicating.**

ELA-4-M1 Speaking intelligibly, using standard English pronunciation and diction;
ELA-4-M2 Giving and following directions/procedures;
ELA-4-M3 Using the features of speaking when giving rehearsed and unrehearsed presentations;
ELA-4-M4 Speaking and listening for a variety of audiences and purposes;
ELA-4-M5 Listening and responding to a wide variety of media;
ELA-4-M6 Participating in a variety of roles in group discussions.

Standard Five **Students locate, select, and synthesize information from a variety of texts, media, references, and technological sources to acquire and communicate knowledge.**

ELA-5-M1 Recognizing and using organizational features of printed text, other media, and electronic information;
ELA-5-M2 Locating and evaluating information sources;
ELA-5-M3 Locating, gathering and selecting information, using graphic organizers, outlining, note taking, and summarizing, interviewing, and surveying to produce documented texts and graphics;
ELA-5-M4 Using available technology to produce, revise, and publish a variety of works;
ELA-5-M5 Citing references using various formats;
ELA-5-M6 Interpreting graphic organizers.

Standard Six **Students read, analyze, and respond to literature as a record of life experiences.**

ELA-6-M1 Identifying, comparing, and responding to United States and world literature that represents the experiences and traditions of diverse ethnic groups;
ELA-6-M2 Identifying, comparing, and responding to a variety of classic and contemporary literature from many genres;
ELA-6-M3 Classifying various genres according to their unique characteristics.

Standard Seven **Students apply reasoning and problem-solving skills to their reading, writing, speaking, listening, viewing, and visually representing.**

ELA-7-M1 Using comprehension strategies in contexts;
ELA-7-M2 Problem-solving by using reasoning skills, life experiences, accumulated knowledge, and relevant available information;
ELA-7-M3 Analyzing the effects of an author's purpose and point of view;
ELA-7-M4 Distinguishing fact from opinion and probability, skimming and scanning for facts, determining cause and effect, inductive and deductive reasoning, generating inquiry, and making connections with real-life situations across texts.

Grades 9-12

Standard One **Students read, comprehend, and respond to a range of materials, using a variety of strategies for different purposes.**

ELA-1-H1 Using knowledge of word meaning and extending basic and technical vocabulary, employing a variety of strategies;
ELA-1-H2 Analyzing the effects of complex literary devices and complex elements on a selection;
ELA-1-H3 Reading, comprehending, and responding to extended, complex written, spoken, and visual texts;
ELA-1-H4 Interpreting complex texts with supportive explanations to generate connections to real-life situations and other texts;
ELA-1-H5 Using the various purposes for reading to complete complex projects.

Standard Two **Students write competently for a variety of purposes and audiences.**

ELA-2-H1 Writing a composition of complexity that clearly implies a central idea with supporting details in a logical, sequential order;
ELA-2-H2 Using language, concepts, and ideas that show an awareness of the intended audience and/or purpose in developing compositions;
ELA-2-H3 Applying the steps of the writing process, emphasizing, revising, and editing in final drafts;
ELA-2-H4 Using narration, description, exposition, and persuasion to develop various modes of writing;
ELA-2-H5 Recognizing and applying literary devices and various stylistic elements;
ELA-2-H6 Writing as a response to texts and life experiences.

Standard Three **Students communicate using standard English, grammar, usage, sentence structure, punctuation, capitalization, spelling, and handwriting.**

ELA-3-H1 Writing legibly;
ELA-3-H2 Using the grammatical and mechanical conventions of standard English;
ELA-3-H3 Spelling accurately, using strategies and resources when necessary.

Standard Four **Students demonstrate competence in speaking and listening as tools for learning and communicating.**

ELA-4-H1 Speaking intelligibly, using standard English pronunciation and diction;
ELA-4-H2 Giving and following directions/procedures;
ELA-4-H3 Using the features of speaking when giving prepared and impromptu presentations;
ELA-4-H4 Speaking and listening for a variety of audiences and purposes;
ELA-4-H5 Listening and responding to a wide variety of media;
ELA-4-H6 Participating in a variety of roles in group discussion.

Standard Five **Students locate, select, and synthesize information from a variety of texts, media, references, and technological sources to acquire and communicate knowledge.**

ELA-5-H1 Recognizing and using organizational features of printed text, other media, and electronic information;
ELA-5-H2 Locating and evaluating information sources;
ELA-5-H3 Accessing information and conducting research using graphic organizers, outlining, note taking, summarizing, interviewing, and surveying to produce documented texts and graphics;
ELA-5-H4 Using available technology to produce, revise, and publish a variety of works;
ELA-5-H5 Citing references using various formats;
ELA-5-H6 Interpreting graphic organizers.

Standard Six **Students read, analyze, and respond to literature as a record of life experiences.**

ELA-6-H1 Identifying, analyzing, and responding to United States and world literature that represents the experiences and traditions of diverse ethnic groups;
ELA-6-H2 Analyzing distinctive elements of ancient, American, British, and world

literature;

ELA-6-H3 Identifying, analyzing, and responding to a variety of classic and contemporary literature from many genres;

ELA-6-H4 Analyzing various genres as records of life experiences.

Standard Seven **Students apply reasoning and problem-solving skills to their reading, writing, speaking, listening, viewing, and visually representing.**

ELA-7-H1 Using comprehension strategies in contexts;

ELA-7-H2 Problem-solving by analyzing, prioritizing, categorizing, and evaluating; incorporating life experiences; and using available information;

ELA-7-H3 Analyzing the effects of an author's life, culture, and philosophical assumptions and an author's purpose and point of view;

ELA-7-H4 Distinguishing fact from opinion, skimming and scanning for facts, determining cause and effect, generating inquiry, and making connections with real-life situations across texts.

Appendix I

Southwest Educational Development Laboratory (SEDL)

Southwest Educational Development Laboratory (SEDL) (www.sedl.org) is a private, not-for-profit education research and development (R&D) corporation based in Austin, Texas. SEDL works with educators, parents, community members, and policymakers to build or find strategies and tools addressing pressing educational problems. Then, SEDL works with them to put the strategies into practice so they can improve education for all students.

SEDL has developed a collection of resources designed to help reading teachers

- develop a richer understanding of current reading research
- easily find information about reading assessment, and
- use research and assessment information to inform their instructional practice.

SEDL's reading resources include:

- Building Reading Proficiency at the Secondary School Level: A Guide to Resources
- The Cognitive Foundations of Learning to Read: A Framework (PDF version)
  (A print version of the framework is available for purchase, as well as a Literacy Profile Folder to help teachers track individual student data in the areas outlined in the framework.)
  - Reading Assessment Database for Grades K-2
  - Connecting State Standards to the Cognitive Framework of Reading
  - Instructional Resources Database: Instructional Activities
  - Instructional Resources Database: Literary References
- Topics in Early Reading Coherence
- Glossary of Reading-related Terms
- Cognitive Foundations of Learning to Read: A Framework

The Cognitive Foundations of Learning to Read: A Framework provides a concise and very understandable summary of the research findings related to how children learn to read. A graphical representation of the framework is provided to help teachers to become familiar with the cognitive elements that research has shown to be essential in learning to read and to help teachers visualize how the elements fit together in the "big picture" of reading acquisition. The framework helps teachers to understand what is involved in learning to read so they can better

determine what individual children's learning needs are. The framework is presented in two formats -- there is an online version and a PDF version.

APPENDIX J

References

These references were used to compile this booklet. We are thankful to the researchers and authors in the two professional fields of literacy and speech language pathology for their guidance as we explored phonological awareness for children at risk to develop reading skills. Drawing from both disciplines, we were able to envision ways that speech language pathologists and teachers could be intervention partners. We hope our colleagues will benefit from reading some of the same literature.

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