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Connecting speech sounds to print / decoding

The evidence

- Children must be taught how writing systematically encodes spoken language (Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001).
- Evidence from many studies indicates that oral and print development must be closely integrated and coordinated in reading instruction. Students show the most gains in letter knowledge, phonological awareness, alphabetic principle (phonics), and reading success when skills are taught in an integrated program (Blaiklock, 2004; Foorman, Chen, Carflson, Moats, Francis, & Fletcher, 2003; Schneider, Roth, & Ennemoser, 2000; WWC, 2006b).
- Awareness of individual phonemes develops more quickly when children already know letters or when letters are used within phonemic awareness instruction (Ehri et al., 2001; Lonigan, 2007).



Go to our accompanying DVD-ROM or website to view a video clip on how children learn to read.

[Video 4]

2a) Letter knowledge

Letter knowledge is not simply reciting the alphabet. The knowledge of letters includes:

- being able to name letters (the name associated with a letter is invariant: "A" has the same name; the sounds it makes in words are what vary, and the letter "A" can make many different sounds, as in "cap, cape, coat, car")
- identifying both uppercase and lowercase letters, in isolation and in words
- handling letters, grouping them
- discriminating words one from another

Kelly knows the alphabet song by heart, and sings it whenever she has the chance. She can name each letter, but does not understand what they represent. Kelly often confuses "p" with "q" and "b" with "d." Kelly's teacher knows that before she can read, she needs to be comfortable with the alphabet and understand the basic concepts of the alphabet. These challenges are affecting her beginning reading abilities and Kelly's parents are worried these difficulties will stay with her and affect her first reading experiences.

How can Kelly's understanding of letters improve to help her as a future reader?

What would you do if you had a student who did not grasp the concept of letter knowledge? How could he or she be helped to ensure a literate future?

Read the next section for ideas and resources on how to help your students master the concept of letter knowledge.

The evidence

- Teaching letter knowledge concurrently with phonological awareness shows more improvement in student results than if the skills are taught separately (WWC, 2006b).
- Children with greater knowledge of the alphabet tend to have better phonological awareness skills (Johnston, Anderson, & Holligan, 1996).

Explicit instruction of letter knowledge

- Present letters in uppercase and lowercase at random (children know uppercase first, and need practice with lowercase letters; Blair & Savage, 2006); ask children to tell you about each letter. Ask them to give the name, the sound it represents, or a word beginning with that letter.
- To familiarize students with the appearance of letters, ask them to put letters into groups by how they appear (e.g., the letters a, b, c, d, e, g, h have curves and the letters p, q, j, y have hanging sticks).
- Teach letters along with teaching sounds, and ask students to match the sound to the symbol.



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The video clip "Letters and Sounds" on the Reading Rockets website illustrates a Kindergarten teacher working with a student on letters and the sounds they make. See our companion website or DVD-ROM for the link.
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Assessment of letter knowledge

Even if students do not know letter names, letter knowledge can be assessed. The teacher can provide cutouts of letters, numbers, and symbols and have students separate them into their respective groups. Ask the children what they know about each letter, for example, “what sound does it make?” or “do you know a word that starts with this letter?” Students may also be asked to separate letters into upper and lowercase, as well as vowels and consonants (Wren, 2002b).

The teacher can say simple words, and ask students to write down one letter for each word. At this stage, children often represent a whole word with a single letter (e.g., for the word “dog”, the child may only write a “d”), but this reflects an understanding that a word exists as a representation of an object (Wren, 2002b).

2b) Phonological awareness

Phonological awareness is an “umbrella” term used to refer to awareness of any aspect of sound structure in language. It includes:

- understanding that words break down into parts (e.g., syllables, phonemes, etc.)
- ability to recognize and manipulate the individual sounds in speech (e.g., through deletion or substitution of sounds within words, language games that manipulate sounds, rhymes)
- ability to rhyme words (e.g., can, pan); ability to break words into syllables (e.g., ba-na-na)
- ability to break syllables into their onset (beginning) and rime (ending) segments (e.g., c and -at)

Sam experiences difficulty with reading, and his spelling is also below grade level. Sam is beginning to notice that he is not as far along as the other students in his class and has started to lose motivation for reading. His teacher has been trying to keep him motivated by supporting and encouraging him where she can, but something needs to change fast, before Sam completely loses confidence in his reading ability. Sam's teacher decides to check where Sam falls on the benchmark chart, and notices that despite the fact that he is in Grade 2, he has not mastered many of the skills involved with phonological awareness.

How can this teacher support Sam's development of phonological awareness?

She plans on giving Sam some extra work to do at home with his parents, but what should it include?

How can this problem be tackled before it becomes a debilitating issue for Sam?

The evidence

- Children with advanced phonological awareness skills have better reading development than their peers (Whitehurst & Lonigan, 1998).
- Regular exposure to activities that promote phonological awareness skills enhance reading development for all students (Blachman, 2000).
- Two recent reviews of interventions found that instructional activities in phonological awareness were most effective when conducted in small groups or with individual students. Significant improvements occurred in phonological awareness, letter knowledge, reading and spelling skills. These results were effective regardless of the age of the child or the child's previous reading experience (WWC, 2006a, 2006b).



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A child's awareness of the speech-sound relationship, measured in Kindergarten, predicts his or her reading ability in the primary school years.

(Catts, Fey, Zhang, & Tomblin, 1999; National Reading Panel, 2000; Whitehurst & Lonigan, 1998).
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Explicit instruction of phonological awareness

- Ensure that children understand that, for example, the word "camel" has an /m/ sound in it, and that the /m/ sound in the middle of "camel" is the same as the /m/ sound at the end of "home" and at the beginning of "moon".
- Syllables: Work with syllables as a first step before isolating individual sounds. For example, syllable splitting: Clap for each syllable in a word "ba-na-na" – three claps
- Rhyming: What words rhyme with "cat"? "bat, rat, sat, mat, fat".
- Phoneme isolation: What is the first sound in pig? "/p/" – the onset (i.e., initial sound). What is the rest of the word? "ig" – the rime (i.e. the rest of the syllable). Work with word families that share onsets or rimes (e.g., for onset: "rat, run, round, race, rub, rocket"; for rime: "ball, fall, small, tall, call").



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Go to our accompanying DVD-ROM or website to view a Kindergarten demonstration of a picture rhyming group activity that reinforces phonological awareness.

[Video 5]
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Assessment of phonological awareness

Assessment of phonological awareness can involve breaking words into parts. The child is asked to say the word aloud, but is instructed to pause after saying each part (i.e., segmentation). This can be accomplished in several ways: the child can segment compound words (e.g., "cow" (pause) "boy"), non-compound words (e.g., "pen-" (pause) "-cil") and onsets and rimes of words (e.g., /m/ (pause) "-oon"; Wren, 2002b).

2c) Phonemic awareness

Phonemic awareness is part of phonological awareness. It is an awareness of individual phonemes (see chart on p.27).

- It is an ability to notice, think about, or manipulate (e.g., isolate, delete) the individual phonemes in words.
- It is an understanding that individual segments of sound at the phonemic level can be combined to form words (i.e., blending or synthesis).



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Not to be confused with phonics

Phonics is a teaching term for the study of the relationships between letters of the written language and the sounds of the spoken language (sound-symbol correspondences)

If children are to benefit from phonics instruction, they need phonemic awareness.
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Aaron is in Grade 1. He knows his alphabet and reads the letter names ("bee – aaa – tee") to try to blend them into words. Another student in his class can say the sounds of the letters and make words ("/b/ /a/ /t/ = bat"). Although Aaron knows and can read some words by memory, he is unable to read new words. When his teacher says a word and asks him to change the first sound to make a new word, he is unable to answer.

What could you do to help your students if they had a similar problem (lack of phonemic awareness)?

How would you assess their development of phonemic awareness and adapt your teaching to accommodate those who need more help?

The evidence

- Instruction that teaches children to manipulate phonemes in words significantly improves reading (National Reading Panel, 2000; SEDL, 2008).
- Most children entering school have normal phonological skills (i.e., they can hear speech sounds) but lack phoneme awareness. For most children, phoneme awareness must be explicitly taught (SEDL, 2008).
- Phoneme awareness is necessary for the child to understand that the letters in written words represent the phonemes in spoken words (National Reading Panel, 2000, SEDL, 2008).
- A well-established finding in reading research is the predictive relationship between phonemic awareness and reading acquisition (Kame'enui et al., 1997).

Explicit instruction of phonemic awareness

- Teach phonemes along with letters, not in isolation (e.g., what sounds do the letters make in this word?).
- Sequence introduction of phonemes from simple consonant sounds (p, b, t, s) to vowel sounds, to complex phonemes (-ng /ŋ/, th /θ/ or /ð/, ch /tʃ/, or sh /ʃ/).
- Scaffold from or build upon what the students know.
- Phonemes should be taught as sounds, without an "uh" sound at the end. This makes blending sounds much easier (e.g., saying "ruh-a-nuh" makes blending the individual sounds in "ran" difficult). The sounds /s/ and /m/ are the easiest to say without adding an "uh" sound; therefore, they should be used first when teaching phonemic awareness.
- Facilitate blending sounds by providing multiple opportunities to practice.
- The child does not need to learn all phonemes; they can demonstrate awareness of sounds in words using a small list of phonemes (SEDL, 2008).



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Reading Rockets provides a video of a one-on-one practice of playing with the sounds of letters. See our website or DVD-ROM for the link to this video.



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Phonological and phonemic awareness activities can be done with nonsense words. Go to our accompanying DVD-ROM or website to see a classroom demonstration.

[Video 6]
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Sample phoneme manipulations

Phoneme addition: "What happens when you add /s/ to the beginning of 'park'?" "spark"

Phoneme deletion: "What is 'cat' without the /k/?" "at"

Phoneme manipulation: "What word would you have if you changed the /t/ in 'cat' to an /n/?" "can"

Phonemic segmentation: "What are the sounds in 'cat'?" "/k/ /æ/ /t/ "

Phoneme identity: "What words begin with /s/?" "snake, sit, saucer"

Categorization: "What word does not belong with the others: 'cat, mat, bat, ran'?" "ran"

Blending: Saying sounds together quickly (i.e., blending) produces a word (e.g., "What word is made up of the sounds /k/ /æ/ /t/?" "cat")

(Adapted from Armbruster et al., 2003)



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It is possible to go overboard teaching phoneme awareness. The student just needs to demonstrate awareness that spoken words are made up of phonemes and that phonemes can be arranged and manipulated into different words.

SEDL, 2008
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Assessment of phonemic awareness

For beginning phonemic awareness assessment, a child can be asked to complete any of the above manipulations or count the number of phonemes in a word.



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Go to our accompanying DVD-ROM or website to view a Kindergarten classroom demonstration of an activity that teaches phonemic awareness and sound-letter correspondence.

[Video 7]
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2d) Understanding the alphabetic principle

The alphabetic principle is the code and foundation of most alphabetic writing systems. The alphabetic principle is the understanding that letters and letter patterns in written words have systematic, predictable relationships with the sounds in spoken words.

Madison is in Grade 1 and is excited to learn how to read, just like her older brother. However, every time she is presented with a (grade appropriate) new text, she is unable to understand what is on the page or sound out the words. Madison has not made the connection between the letters and their sounds. To her, letters are abstract objects that have no meaning. Madison has tried to memorize short stories to make it appear she can read, but new reading material intimidates her, and she is losing her motivation to read.

What can you do to make sure all of your students understand phonics, and how letters and sounds correspond?

Read the following section for ideas on how to help students such as Madison with their reading.

Phonics is a teaching term for the study of the alphabetic principle (i.e., sound-symbol correspondences). Phonics is a system for remembering how to read words. Knowing the relationships will help children recognize familiar words automatically and “decode” or sound out new words (Armbruster et al., 2003).



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Reading Rockets First Year Teacher Program. This is an online resource for effective teaching strategies; it includes a discussion of how to recognize whether a phonics program is systematic and explicit.

Go to our website or DVD-ROM for a link.
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The evidence

A systematic review found that explicit, systematic phonics instruction (see explanation below) has a significant positive effect on decoding text, reading accuracy, and spelling abilities in children; it is also significantly more effective in improving the alphabetic knowledge and reading skills of children from low socioeconomic backgrounds (Torgerson, Brooks, & Hall, 2006).

Explicit systematic phonics instruction

- Clearly identify a useful set of sound-letter relationships.
- Organize the introduction of these relationships into a consistent logical instructional sequence.
- Carefully scaffold introduction of new sound relationships and phonics skills from simple to more complex letter-sound correspondences (e.g., digraphs such as “wh” or “ee”, diphthongs such as “oo” or “oi”, blends such as “bl” or “str”).



Resource:
Making sense of phonics: The hows and the whys,
by Isabel Beck (2006). New York: Guilford Press.

Synthetic phonics instruction

Synthetic phonics introduces children to letter sounds before they are introduced to reading from books. After the first few sounds have been taught, students are shown how these sounds can be blended together to make words (e.g., with /t/ /p/ /a/ and /s/, children can form the words ‘tap,’ ‘pat,’ ‘pats,’ ‘taps,’ and ‘sat’).

Children are not told the pronunciation of the new word; they sound out each letter in turn and synthesize the sounds together in order to generate the pronunciation of the word. Thus, the children construct the pronunciation for themselves. See the link to Jolly Phonics on our website as an example.

Research results show modest advantages for a synthetic phonics method over an analytic phonics method (looking at words, changing sounds, and creating new words: mug, bug, rug) in the reading, spelling, phonemic awareness and phonics of children (National Reading Panel, 2000; Torgerson et al., 2006). However, these results are not large enough to be significant, and would indicate that both synthetic and analytic phonics are important in developing decoding skills.

More studies on synthetic versus analytic phonics are needed (Torgerson et al., 2006).



For more information about Jolly Phonics, go to our
website or DVD-ROM for a link.

Jolly Phonics, a well-researched synthetic phonics program, teaches groups of sound-letter correspondences in the following order:

1. s, a, t, i, p, n
2. c, k, e, h, r, m, d
3. g, o, u, l, f, b
4. ai, j, oa, ie, ee, or
5. z, w, ng, v, oo
6. y, x, ch, sh, th
7. qu, ou, oi, ue, er, ar

(from Bowey, 2006)



Go to our accompanying DVD-ROM or website to view video clips on research results that show a role for invented spelling at the very beginning stages of exploring the connection between sounds and letters.
[Video 8]

- Teach patterns for pronunciation such as the “silent e” rule, which lengthens the vowel sound (Bowey, 2006).
- Use a program such as Phonological and Strategy training (PHAST) (Lovett, 2000).
- Explicitly address patterns in irregular words.
- Provide students with ample practice to build sight word recognition of irregular words.
- Allow students many opportunities to practice the new sound-letter relationships in words, sentences, reading, and writing.
- Link phonics instruction to word recognition and spelling activities.
- Establish instructional routines for development of phonetic decoding efficiency.



Go to our accompanying DVD-ROM or website to see a video clip with examples of inventive spelling in a Kindergarten class.
[Video 9]

Evidence shows that practicing inventive spelling (e.g., "b-r-o-k" for "broke") is beneficial for young children (usually in Kindergarten). This allows the child to practice connecting sounds with letter patterns (Ehri et al., 2001) and demonstrate an understanding of written language. Once the child has made a connection between letters and sounds, he or she should begin to learn conventional spelling (in Grade 1 or 2).



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*Sample resource for intervention, prepared by a teacher:
A practical guide for 1st grade teachers: Strategies
to assist 1st graders who are not reading by January,
(Williams 2003).*

Go to our website or DVD-ROM for a link.
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Examples of phonics assessment

Point to words or groups of sounds and have the student read them aloud. Make a specific speech sound (e.g., "er" or "ow" or "scr") and have the student identify (e.g., written or orally) the letter or group of letters that represent that sound. Ask students "what sound does the letter 'v' make?" or "what sound(s) do the letters "oo" make?" (Wren, 2002b).