Phonemic awareness helps beginning readers break the code

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When children learn to speak a language, they naturally become well acquainted with its elementary speech sounds, or phonemes. They pronounce these sounds with every word, and they hear them spoken in every utterance. Despite their remarkable expertise in speech, children ordinarily spend little time thinking consciously about the phonemes they use. Their focus is quite properly on getting meaning and on producing understandable messages. And, indeed, phonemic awareness would be irrelevant were it not for the fact that phonemes are the units encoded by the letters of the alphabetic languages used in most of the modern world, the raw material of reading and writing.

The insight that words are composed of smaller units (i.e., phonemes) may be difficult for some children to grasp because phonemes are very abstract units of language. They carry no meaning, and children are accustomed to thinking of words in terms of their meanings, not in terms of their linguistic characteristics. Additionally, there is the problem of producing a phoneme in isolation. Phonemes are not discrete units. The attributes of a phoneme spill over into those that come before it and follow it in a word (Adams, 1990).

Phonemic awareness has been defined as the ability to examine language independently of meaning and to manipulate its component sounds (Cunningham, 1988). And because phonemes are not discrete units, phonemic awareness requires the ability to attend to a sound in the context of the other sounds in the word. There may be several levels of phonemic awareness. The phonemic awareness tasks easiest for children are those

requiring them to rhyme words or to recognize rhymes. Blending phonemes and syllable splitting (e.g., segmenting the beginning sound of back, /*b*/, from the remainder, -*ack*) are intermediate-level tasks. The most difficult phonemic awareness tasks are those that involve completely segmenting the phonemes in spoken words and manipulating phonemes to form different words (Adams, 1990).

Phonemic awareness skill enables children to use letter-sound correspondences to read and spell words. For example, children segment the phonemes of a word to invent a spelling by assigning letters to represent its sounds. Children have to blend sounds together when they use letter-sound correspondences to read words they have never before seen. However, phonemic awareness is *not* synonymous with phonics. It is not learning spelling-to-sound correspondences, and it is not sounding out words. It is an understanding of the structure of *spoken* language. In fact, it is unlikely that children lacking phonemic awareness can benefit fully from phonics instruction (Juel, Griffith, & Gough, 1986) since they do not understand what letters and spellings are supposed to represent.

It is important for teachers to understand that phonemic awareness has been shown to be a very powerful predictor of later reading achievement (Juel, 1988; Juel, Griffith, & Gough, 1986; Lomax & McGee, 1987; Tunmer & Nesdale, 1985). In fact, it is a better predictor than more global measures such as IQ or general language proficiency. We know, for example, that poor readers who enter first grade phonemically unaware are very likely to remain poor readers at the end of fourth grade, since their lack of phonemic awareness contributes to their slow acquisition of word recognition skill (Juel, 1988).

In a study comparing whole language and traditional reading instruction, children who began first grade high in phonemic awareness did well regardless of the kind of reading instruction they received. That is, the children in whole language classes who had already developed an awareness of phonemes in spoken words were able to induce letter-sound correspondences without ever receiving explicit phonics instruction. On the other

hand, neither type of instruction was any better for the children who were low in phonemic awareness at the beginning of first grade (Klesius, Griffith, & Zielonka, 1991).

Other studies have shown that phonemic awareness training has a positive effect on the development of children's word recognition and spelling abilities. Bradley and Bryant (1983) provided phonemic awareness training to children over a two-year period of time. The training included rhyme and alliteration activities as well as tasks in which the children were taught to identify the odd word (e.g., bun, *hut*, gun, sun). They concluded that phonemic awareness training had a positive effect on reading success, and the training was especially powerful when combined with explicit instruction in the alphabetic principle. Lundberg, Frost, and Petersen (1988) taught pre-school children to attend to the phonological structure of language prior to any explicit instruction about the alphabetic writing system. The phonemic awareness training had a facilitative effect on the acquisition of spelling ability in Grade 1 and word recognition and spelling ability in Grade 2. Ball and Blachman (1991) concluded from an intervention study with kindergarten students that young children can be taught to segment spoken words into phonemes. Furthermore, their research suggests that the most pedagogically useful phonemic awareness training includes letter-name and letter-sound instruction primarily because it makes explicit the relationship between sound segments and letters.

Given these promising research findings, three questions about phonemic awareness that teachers of young children may ask are: (a) Why is phonemic awareness important? (b) How can phonemic awareness be assessed? and (c) What can I do to develop a child's phonemic awareness?

Why is phonemic awareness important?

One of the things we have learned about phonemic awareness is that it plays a very selective, although necessary, role in the reading acquisition process. While phonemic awareness is not needed to speak or understand language (Lundberg et al., 1988), it plays a critical role in learning skills requiring the manipulation of phonemes—specifically

word recognition and spelling. It is important for children to overlearn these lower-order processes until they are automatic so that conscious attention will not be diverted from the higher-order processes of comprehending during reading (LaBerge & Samuels, 1974) and composing during writing (Scardamalia, 1981).

The spelling system of the English language is based on the alphabetic principle. Written words are composed of sequences of letters that roughly correspond to the phonemes of spoken words. In order for children to learn to read and spell words they must have an understanding of how spoken language maps onto written language. It appears that some level of phonemic awareness helps a child grasp this understanding. A child who is aware of phonemes is not confused when the teacher starts talking about the sounds that letters stand for in a word, and thus is able to benefit from instruction. Equally important, the child with phonemic awareness can consciously isolate those individual sounds in the context of the other sounds in the word. While children without phonemic awareness may be able to memorize isolated letter-sound correspondences by rote, they will not understand how to actually coordinate letter-sound relationships to read or write novel words.

How can phonemic awareness be assessed in a classroom?

Teachers can use several informal assessment activities to determine whether children have developed enough phonemic awareness to progress rapidly in beginning reading. Adams (1990) suggests that phonemic awareness is not an all-or-nothing trait, something a person either has or doesn't have. Rather, we can distinguish levels of phonemic awareness, reflecting a growing ability to recognize speech as made up of elementary sounds that can be brought under control. Testing for these levels can be accomplished in brief assessment sessions using activities children will enjoy. The assessment tasks in this section are all taken or adapted from a study by Yopp (1988) who compared the reliability, validity, and difficulty of 10 phonemic awareness measures.

Though the tasks are gamelike, it is important to minimize frustration by restricting assessment to no more than one task per sitting. Also keep in mind in planning an assessment that phonemes do not correspond neatly with spellings. Sounds are often represented by combinations of letters; for example, *choose* has 6 letters but only 3 phonemes, /*ch*/, /*oo*/, and /*z*/.

Simple tasks requiring a child to recognize whether pairs of words rhyme enable a teacher to assess phonemic awareness at a rudimentary level. First, prepare a list of 20 pairs of common words, choosing rhyming words for at least half of the pairs (e.g., *fat-cat*). Explain to the child that rhymes are words that sound the same at the end, and show with examples how some words rhyme and others do not. Then pronounce each pair of words, asking the child if they rhyme. Yopp (1988) reported a mean score of 15 correct out of 20 such pairs when a similar assessment was used with kindergarten children.

Blending speech sounds into words is an easy task that requires a slightly higher level of phonemic awareness. A simple game offers a highly reliable measure of blending skill. Prepare a list of 30 short words. The first 10 should have just 2 phonemes (e.g., *is*); the other 20 should be 3- or 4-phoneme words. Divide 10 of these longer words before the vowel (e.g., *m-an*) and segment the others completely (e.g., *sh-i-p*). Tell the child you will say words in a secret language, and he or she will try to guess what word you are saying. The mean score in Yopp's (1988) study for kindergarten children performing this task was 20 words correct.

A higher level of phonemic awareness is needed to isolate speech sounds. While we technically cannot isolate many of the phonemes, it appears advantageous for children to approximate the sounds during early reading instruction. Select 15 3-phoneme common words, targeting sounds in the beginning (*j*am), middle (s*oa*p), and end (boo*k*). Demonstrate for the child how phonemes can be pronounced, showing how *fat* starts with /*f*/, *teeth* has the /*ee*/ sound in the middle, and *work* ends with the sound /*k*/. Then play the game, giving each word and the position of interest, and asking the child to say that sound. On a similar list of words used with the kindergarten children in Yopp's (1988)

study, the mean score for this assessment was 9 correct. In Yopp's study, this task was an excellent predictor of readiness for explicit instruction in decoding.

Tasks requiring complete segmentation of phonemes take the issue a step further. Here the teacher prepares a list of 22 common words, each 2 or 3 phonemes in length. The words should sample a variety of sounds represented by vowels and consonants. First demonstrate how several words can be broken down into sounds, and invite the child to say the words in a secret language of sounds. Don't expect high scores on this more difficult task; Yopp's (1988) mean was 12 correct out of a possible score of 22. The segmentation test, however, was shown to be highly trustworthy, an authentic measure of phonemic awareness, and a good predictor of decoding readiness (Yopp, 1988).

Tests requiring children to remove phonemes from words and to say how the word is transformed (for example, say *cat* without /*t*/) demand the highest level of phonemic awareness. Such tasks are complex, requiring a child to isolate a speech sound and to hold that sound in memory while performing a second operation. Formal assessment batteries can profitably measure such abilities, thereby increasing their predictive power (Yopp, 1988). Such high-level phonemic awareness, however, seems at least partly a *result* of emergent reading ability, rather than an ability needed to profit from reading instruction.

How can a child's phonemic awareness be developed?

Teachers can help children develop phonemic awareness in many ways. They can expose them to literature that plays with the sounds in language, they can provide extensive writing experiences, and they can provide explicit instruction in sound segmentation and in representing the sounds heard in words.

Note that we intend in this piece only to introduce phonemic awareness to teachers; a complete instructional primer is beyond our scope. Fortunately, many of the activities of the early elementary classroom already incorporate important elements that heighten

phonemic awareness. When teachers teach letter names or singing games like "Old MacDonald," they promote conscious awareness of the elementary units of speech. In addition, we suggest a few specific activities below. These should be integrated as much as possible into authentic literacy events.

Literature that plays with the sounds in language. Text can deal playfully with the sounds of language through rhyme and through manipulation of phonemes. In alliteration and assonance, the same sound occurs in two or more words of text. The alphabet book *Animalia* contains many examples of alliteration, the repetition of an initial consonant sound across several words, for example, "Lazy lions lounging in the local library" (Base, 1986). Assonance, the repetition of vowel sounds within words, may be combined with rhyming to create playful text. Some examples are "A leaf, a tree, a green bean green" from *Who Said Red*? (Serfozo, 1988), and "It rains and hails and shakes the sails./Sheep wake up and grab the rails" from *Sheep on a Ship* (Shaw, 1989).

Read rhyming texts to children each day. From repeated readings of rhyming and playful texts, children will develop a repertoire of "old favorites," which can serve as springboards for children to create their own rhymes. For example, the *Jamberry* poem "Hatberry/Shoeberry/In my canoeberry" (Degen, 1983) might become "Tootberry/Hornberry/Can't eat a thornberry."

Don't Forget the Bacon! (Hutchins, 1976) plays with language through the manipulation of phonemes. In this story a child is sent to the store with a shopping list which includes "six farm eggs, a cake for tea, and a pound of pears." As he walks to town he rehearses the list, but he inadvertently switches phonemes in some of the words, changing the shopping list. For example, "a cake for tea" goes through several permutations, evolving by way of "a cape for me" to become "a rake for leaves." Have children role-play the child in the story rehearsing his shopping list. As they do this, they can explore how the sounds in words can be switched.

In addition to pure enjoyment, sound-play books heighten a child's sensitivity to the phonological structure of language. Some children may be able to discover and attend to sounds in language as a result of the linguistic stimulation provided by these kinds of books. Indeed, children who have enjoyed extensive storybook exchanges may develop phonemic awareness without direct instruction.

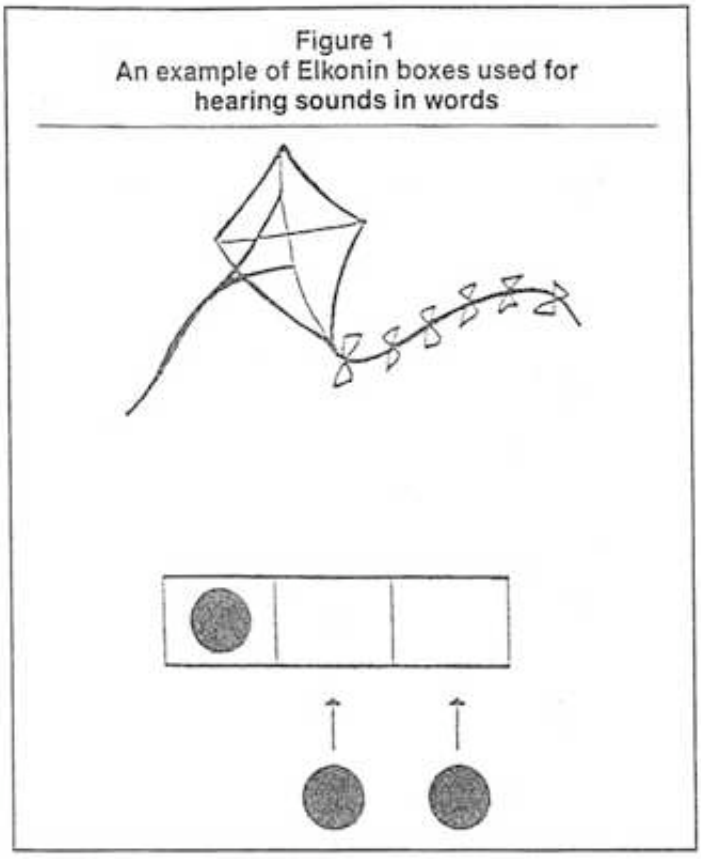
Writing experiences. Clay (1985) has said that children practice many of the skills of reading in another form when they write. However, the writing must not just be copying letters or words from a chart or chalkboard. It must be going from thoughts to saying words to writing them. At least one study has shown that frequent opportunities to write using invented spellings, which are characteristic of whole language classrooms, enhance writing fluency. Over time daily writing experiences may be beneficial for children lacking phonemic awareness (Griffith & Klesius, 1990). When children write they have to face head-on the problem of mapping spoken language onto written language. Serendipitous to this can be an understanding of the structure of spoken language, because the more children write, the better they become at segmenting sounds in words.

Hearing sounds in words. Listening to text that plays with language and writing with invented spellings are indirect ways to enhance phonemic awareness. With some children it may be necessary to provide more explicit instruction in hearing sounds in words. For such instruction to be effective, children need first to understand that language can be examined independently of meaning (Cunningham, 1988). Lundberg et al. (1988) describe a phonemic awareness training program that began with the segmentation of spoken language into words and syllables. Words and syllables are more directly perceivable and thus more easily available to children than are phonemes. In noncompetitive social situations, the children matched words and syllables to physical movements such as clapping, marching, and walking in place. The rhythmic activities helped the children focus on speech segments separately from meaning.

> The use of Elkonin boxes (from the Russian psychologist, D.B. Elkonin) is a procedure prescribed by Clay (1985) as a Reading Recovery strategy to help

children think about the order of sounds in spoken words. The teacher prepares a card with a picture of a simple word. Below the picture is a matrix that contains a box for each phoneme (not letter) in the word. Words should be chosen from text with which the children have become thoroughly familiar through multiple oral readings. The use of a whole-to-part sequence of instruction will ensure that children have a context to which they can relate the abstract sounds (Bridge, 1989). An example of these sound segment cards appears in

Figure 1
An example of Elkonin boxes used for hearing sounds in words



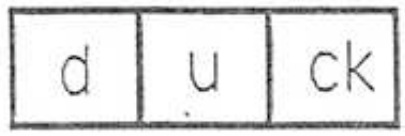
The teacher slowly articulates the word while pushing counters into the boxes, sound by sound. The child is encouraged to join in the process, perhaps by articulating the word while the teacher moves the counters and later by moving the counters herself. Gradually the responsibility should be transferred to the child. The task can be made more complex by removing the matrix and having only the counters available. Later the picture can be removed. Eventually the child should be able to count the number of sounds in a word and be able to answer questions about the order of sounds in words, for example, What is

the first sound you hear in *kite*? What sound do you hear after /_/ in *kite*? (Gillet & Temple, 1990).

Initially it may be easier for children to hear continuant consonants at the beginning of words. These include /*m*/, /*s*/, /*f*/, /*sh*/, and /*th*/. For stop consonants, Lundberg et al. (1988) suggest an iterating technique. For example, the teacher might say "/*k*/ /*k*/ /*k*/ kite" to help the child hear the initial phoneme in kite.

A related activity is to use boxes to make the connection between sound segments and letters explicit. Draw a box for each sound in a word the child wants to write. Words should be those the child has not yet learned to spell. Ask questions such as, What sounds can you hear? What letters might you see? Where will the letters go? Encourage the child to write the letters she knows and ensure that they go in the correct box. The teacher can help by filling in any letters the child does not know. Figure 2 is an example of boxes used for writing words (Clay, 1985).

Figure 2
An example of boxes used for hearing sounds and writing letters



Phonemic awareness activities will not be helpful to a child unless they can be placed in a context of real reading and writing. This can be accomplished by relating sound segmentation tasks to the actual things a child does when trying to read or spell a word. For example, writing letters in boxes should be related to the invented spelling process of breaking a word apart and representing the sounds with letters. The value of being able to hear sounds in

words can be emphasized by showing children how it helps them cross-check what they read with the letters they would expect to see in the printed word (Clay, 1985).

In summary, to gain phonemic awareness is to become conscious of the basic sounds of speech. In learning to read and write an alphabetic language, phonemic awareness is critical, since our system of writing maps letters to phonemes. Extensive research has indicated the importance of phonemic awareness as prerequisite for understanding the alphabetic principle, namely that letters stand for the sounds in spoken words. Thus the emergent reader faces the critical tasks of learning to blend phonemes into words and to segment words into phonemes. The ability to perform these tasks can be measured by a sequence of gamelike tasks. More importantly, we can promote phonemic awareness with a series of well-planned activities in the language arts curriculum in kindergarten and first grade. For some children, these activities may be enjoyably superfluous. For others, however, they may bridge a critical gap between inadequate preparation for literacy learning and success in beginning reading.

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