Developing phonemic awareness in young children

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Most children enter kindergarten with a substantial vocabulary and adequate syntax. In addition, they have a sufficient command of most of the phonemes that constitute their language; that is, they can pronounce most sounds clearly (Singer, 1979). The aspect of language that these young children typically lack, however, is phonemic awareness, an understanding that speech is composed of a series of individual sounds. Cat, in other words, is simply cat, a furry animal that purrs. Young children are unaware that the spoken utterance cat is a word that is made up of a series of sounds, or phonemes, /k/, /æ/, and /t/ (see Adams, 1990, for a thorough discussion of phonemic awareness).

Whether or not a child is phonemically aware can be determined through a variety of tasks (Lewkowicz, 1980; Yopp, 1988). One task requires that the child blend a series of orally presented sounds together to form a word. For instance, given the separate sounds /r/-/u/-/n/, the child should respond with the word run. Or, a child might be asked to tell what sound he or she hears at the beginning, middle, or end of a spoken word. What sound do you hear at the end of the word stop? What sound do you hear at the beginning of the word kite? Another more difficult task requires that the child segment an utterance into its separate sounds. In the example above, given the word run, the child would respond “r/-/u/-/n/.” Children who can perform such tasks successfully have control over the smallest units in their speech, phonemes, and they are considered phonemically aware.

Performing phonemic awareness tasks is not easy. The tasks require that children treat speech as an object and that they shift their attention away from the content of speech to the form of speech. Phonemic awareness tasks demand that children analyze or manipulate the units of speech rather than focus on meaning.

Additionally, the very nature of phonemes makes awareness of them difficult (Valtin, 1984). Phonemes are not discrete units in speech but are encoded at the acoustic level into larger units, approximately syllabic size (Liberman, Cooper, Shankweiler, & Studdert-Kennedy, 1967). In short, phonemes are abstract units of speech.

Evidence of this abstract nature of phonemes can be found in that (a) they are not
marked by physically definable boundaries, and (b) they are highly influenced by phonological context. Gleitman and Rozin (1973) demonstrated the lack of physically definable boundaries in an experiment in which they attempted to isolate the phoneme /d/. The researchers recorded the syllable /di/ on tape and then replayed the tape over and over again, cutting off a little bit of the syllable each time. A pure /d/ was never heard. Instead, listeners reported hearing a chirping sound that had no resemblance to normal speech sounds. Henderson (1982) noted how phonemes are influenced by their phonological context. The phoneme /d/, for example, will have a subtly different sound when followed by /oo/ than by /i/. Try saying each of these syllables slowly and note the different position of your tongue for the beginning /d/ sound.

**The relationship between phonemic awareness and reading**

An alphabetic orthography, such as English, encodes speech at the level of the phoneme. The reader's task is to understand the relationship of the letters in the writing system to the phonemes in the language. This requires that the reader recognize that speech can be segmented into smaller units, that is, that the reader become phonemically aware (Downing, 1979; Downing & Leong, 1982; Mattingly, 1972, 1984). The hypothesis that reading acquisition and phonemic awareness are related has been repeatedly supported by research. The relationship is significant even when intelligence and socioeconomic status are controlled (Goldstein, 1976; Zifcak, 1977).

The relationship between phonemic awareness and learning to read can be interpreted several ways. Two seemingly contradictory hypotheses are (a) that phonemic awareness is a consequence of learning to read, and (b) that phonemic awareness is a prerequisite of learning to read. While some studies support the notion that phonemic awareness is a consequence of exposure to print and formal reading instruction ( Ehri, 1979; Read, Yun-Fei, Hong-Yin, & Bao-Qing, 1986), there is also substantial evidence that at least some level of phonemic awareness is a prerequisite for learning to read (Juel, Griffith, & Gough, 1986; Tunmer, Herriman, & Nesdale, 1988; Tunmer & Nesdale, 1985; Yopp, 1985). In fact, the relationship between phonemic awareness and learning to read is most likely one of reciprocal causation ( Perfetti, Beck, Bell, & Hughes, 1987) or mutual facilitation ( Liberman, Shankweiler, Fischer, & Carter, 1974). In other words, in order to benefit from formal reading instruction, youngsters must have a certain level of phonemic awareness. Reading instruction, in turn, heightens their awareness of language. Thus, phonemic awareness is both a prerequisite for and a consequence of learning to read.

**Training of phonemic awareness**

Since there is considerable evidence that some level of phonemic awareness is a necessary condition for learning to read, an important question is: Can phonemic awareness be taught, or is it strictly a result of maturation? If the latter is the case, then teachers have little control over their students' levels of phonemic awareness.

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Several studies have addressed this question and have demonstrated that children can indeed be successfully trained in phonemic awareness ( Ball & Blachman, 1991; Hohn & Ehri, 1983; Marsh & Mineo, 1977; Williams, 1980; Yopp & Tatro, 1992). These studies have included both young children and learning disabled children, and the findings have indicated that training results in significant increases in phonemic awareness. How this training affects participants' subsequent reading performance was examined by Lundberg, Frost, and Petersen (1988) and Bradley and...
Bryant (1983). Each of these studies will be described.

Lundberg et al. (1988) trained 235 kindergartners in 12 different classrooms in Denmark. The children were drawn from a lower socioeconomic working-class population and were 6 years of age. The training consisted of 15 to 20 minute daily sessions that lasted the entire kindergarten year from September to May. The aim of the training was to guide the children to discover and attend to the phonological structure of language through the use of exercises and games. The students in each classroom participated in the activities as a whole group. A control group of 155 children from different kindergarten classrooms was drawn from the same socioeconomic background as the experimental children. These controls participated in the typical kindergarten curriculum in Denmark in which social and esthetic aspects of development are emphasized and formal cognitive and linguistic training are avoided.

All children were pretested on a series of phonemic awareness tasks at the beginning of their kindergarten year. Posttests given at the end of the year revealed that there was a substantial training effect: Children who had received phonemic awareness training progressed in phonemic awareness significantly more than children who had not received such training. Furthermore, this effect was maintained over time. When children were tested again several months later at the beginning of first grade, the trained children still performed significantly better than control children.

What is most interesting is the effect that this training had on reading acquisition. When these children entered first grade, formal reading instruction was introduced. Eight months into the school year, all children were given a reading achievement test. Those children who had received phonemic awareness training in kindergarten significantly outperformed those who had not participated in training. In addition, the trained children were superior spellers.

Bradley and Bryant (1983) also demonstrated that training in phonemic awareness can positively affect reading and spelling achievement. Children 4 and 5 years of age who were nonreaders were pretrained on their ability to categorize words on the basis of common sounds. This task involves the identification of the odd word among a set of words. For example, given the words hill, pig, and pin, the child indicates that hill is the odd word since pig and pin both begin with the same sound. Likewise, given the words doll, hop, and top, doll is designated as the odd word since hop and top share a common ending sound. Children who received low scores on this task were matched according to age, verbal intelligence, and score on the sound categorization task. Some of the children then were given intensive training on categorizing words on the basis of initial, medial, and final sounds. This training took place over the course of 2 years and involved 40 individual sessions. Results of subsequent standardized tests revealed that training had a considerable effect on reading and spelling achievement. The authors concluded that awareness of phonemes had a powerful influence on eventual success in learning to read and spell.

Both the Lundberg et al. (1988) and the Bradley and Bryant (1983) studies demonstrate that specific language experiences can be offered to young children that will significantly affect their progress in phonemic awareness and their subsequent reading and spelling acquisition.

Suggestions for teachers

Many of the successful training programs described in the research literature make use of very structured instructional procedures in specialized settings (e.g., Marsh & Mineo, 1977; Williams, 1980) and therefore are impractical for classroom teachers. However, studies such as that by Lundberg et al. (1988) reveal that less formal activities conducted in real classroom settings also result in gains in phonemic awareness and subsequent reading and spelling achievement. Thus, a growing number of reading experts are urging classroom teachers to provide their students with "linguistic stimulation above and beyond speaking and listening during the preschool [and early school] years: storytelling, word games, rhymes, and riddles, and the like" (Mattingly, 1984, p. 24) in order to facilitate the acquisition of phonemic awareness (see also Adams, 1990, and Tunmer & Rohl, 1991). One means of doing this, suggested by Griffith and Olson (1992), is through frequent readings of literature selections that "deal
playfully with the sounds of language through rhyme and through the manipulation of phonemes" (p. 520). For instance, when teachers read books with alliterative or assonance patterns to their classes, children may begin to attend to the smaller units of their language.

Other activities such as songs and games that play with language, encourage participation, and leave students feeling successful also are useful in shifting children's attention away from the content of language to its form and can be readily incorporated into preschool, primary grade, and learning-disabled classrooms. Teachers themselves can easily develop such activities. Guidelines for developing phonemic awareness activities are in the next section, followed by a series of examples and general recommendations regarding their use.

**Developing phonemic awareness activities**

The objective of any phonemic awareness activity should be to facilitate children's ability to perceive that their speech is made up of a series of sounds. It is the breaking down and manipulation of spoken language that is of interest. Hence, the focus of activities should be on sounds in the speech stream. There are many different ways to examine and manipulate sounds.

A useful way for the teacher to think about phonemic awareness activities is according to the nature of the task that must be performed. For instance, an activity may require the participant to match words by sounds, isolate a sound in a word, or segment a word into its constituent sounds. Each of these tasks is related to phonemic awareness (Yopp, 1988). The first step in developing an activity is to identify the precise task on which the teacher wishes to focus, for example, blending separate sounds together to form words.

The next step is to consider a developmentally appropriate means for engaging children in the task. The more playful, game-like, and amusing the activity, the better. Riddles and guessing games are excellent vehicles for drawing children's attention to the smaller aspects of their spoken language. Familiar songs also provide a useful vehicle for phonemic awareness activities, the familiar melody providing a comfortable context for children to sing new lyrics that explore sounds.

**Examples of phonemic awareness activities**

The examples presented in this article are drawn in part from a series of activities created several years ago to enhance young children's phonemic awareness (Yopp & Ivers, 1988). They have been field tested in many classrooms, and both anecdotal accounts and experimental research (Yopp & Troyer, 1992) indicate that children respond to the activities with enthusiasm and increasing facility. With one activity in particular, significant gains in phonemic awareness were found after only 15 to 20 minutes of daily use for 2 weeks. Children randomly assigned to a control group showed no gains in phonemic awareness (Yopp & Troyer, 1992).

The activities presented here are categorized as follows: sound matching activities, sound isolation activities, sound blending activities, sound addition or substitution activities, and segmentation activities. Teachers may easily modify any of the activities by targeting sounds that are meaningful for their students or discovering other ways of drawing their students' attention to the sounds of their language.

*Sound matching activities.* One of the easier phonemic awareness tasks is matching sounds. Children are asked to decide which of several words begins with a given sound or to generate a word beginning with a particular sound. To identify a word with a targeted sound, children may be given a series of pictures of familiar objects (e.g., snake, dog, cat) and asked to select the one that begins with the /s/ sound, for example. To generate their own examples of a word beginning with a particular sound, the following simple song may be used. The lyrics are sung to the tune of “Jimmy Cracked Corn and I Don't Care.” (Note that the phoneme sound for the letter included in the lyric, /d/, in this case, is sung, not the letter name. This is true for all the songs and rhymes in this section—the children and teacher say the *phoneme sounds*, not the *letter names.*)

Who has a /d/ word to share with us?
Who has a /d/ word to share with us?
Who has a /d/ word to share with us?
It must start with the /d/ sound!
The class sings together; then the teacher may call on individual children to volunteer words that begin with the /d/ sound. Each child's contribution may then be incorporated into the song. If a child responded with "dog," the class could sing the following:

Dog is a word that starts with /d/
Dog is a word that starts with /d/
Dog is a word that starts with /d/
Dog starts with the /d/ sound.

Since the sound, not the letter, is emphasized, children need not know the alphabet in order to be successful at this activity. The lyrics may be adapted, of course, to any sound to which the teacher or children wish to draw attention (e.g., "Who has an /r/ word to share with us?").

Sound isolation activities. In the previous type of activity, the children were told the individual sound and then asked to identify which of a number of words began with the sound or to generate their own examples. Children may also be asked to perform the reverse; that is, they may be given a word and asked to tell what sound occurs at the beginning, middle, or end of the word. The following song encourages students to think about sounds in words. A single sound may be emphasized throughout the entire song, or each verse may focus on a different sound, as in the example which follows. These lyrics are sung to the tune of "Old MacDonald Had a Farm."

What's the sound that starts these words:
Turtle, time, and teeth?
(wait for a response from the children)
/t/ is the sound that starts these words:
Turtle, time, and teeth.
With a /t/, /t/ here, and a /t/, /t/ there,
Here a /t/, there a /t/, everywhere a /t/, /t/.
/t/ is the sound that starts these words:
Turtle, time, and teeth!

What's the sound that starts these words:
Chicken, chin, and cheek?
(wait for a response)
/ch/ is the sound that starts these words:
Chicken, chin, and cheek.
With a /ch/, /ch/ here, and a /ch/, /ch/ there,
Here a /ch/, there a /ch/, everywhere a /ch/, /ch/.
/ch/ is the sound that starts these words:
Chicken, chin, and cheek!

What's the sound that starts these words:
Daddy, duck, and deep?
(wait for a response)
/d/ is the sound that starts these words:
Daddy, duck, and deep.
With a /d/, /d/ here, and a /d/, /d/ there,
Here a /d/, there a /d/, everywhere a /d/, /d/.
/d/ is the sound that starts these words:
Daddy, duck, and deep!

You all did great, so clap your hands!
(Clap, clap, clap, clap, clap)

Examples for focusing on medial and final sounds follow:

Medial:
What's the sound in the middle of these words:
Leaf and deep and meat?
(wait for a response)
/e/ is the sound in the middle of these words:
Leaf and deep and meat.
With an /e/, /ee/ here, and an /e/, /ee/ there,
Here an /ee/, there an /ee/, everywhere an /ee/, /ee/.
/ee/ is the sound in the middle of these words:
Leaf and deep and meat!

Final:
What's the sound at the end of these words?
Duck and cake and beak?
(wait for a response)
/k/ is the sound at the end of these words:
Duck and cake and beak.
With a /k/, /k/ here, and a /k/, /k/ there,
Here a /k/, there a /k/, everywhere a /k/, /k/.
/k/ is the sound at the end of these words:
Duck and cake and beak!

Blending activities. Blending requires children to manipulate individual sounds by combining them to form a word. Given a series of isolated sounds (e.g., /b/-/a/-/t/), children blend them together (e.g., "bat"). A motivating blending game is the "What am I thinking of?" game (Yopp & Troyer, 1992). In this activity, the teacher tells the class he or she is thinking of an animal, for example. (Any category may be used, perhaps correlated with a current unit or instructional theme.) The teacher then gives a clue—the separate sounds in the word. If the teacher was thinking of a cow, he or she tells the class that the animal is a "/k/-/ow/," articulating each of the sounds separately. The children, then, must blend the sounds together to discover the animal the teacher has in mind.

To increase the motivation the teacher may use picture cards and face them away from the children, give the segmented clue, then turn the picture around once the children have guessed. Or, the teacher may make use of a toy box or grab bag, peeking inside and saying, "I see a toy /d/-/u/-/k/ in here. Who knows what I see?"

The lyrics to the song "If You're Happy and You Know It, Clap Your Hands" can be adapted in order to provide another blending activity.

If you think you know this word, shout it out!
If you think you know this word, shout it out!
If you think you know this word, Then tell me what you’ve heard. If you think you know this word, shout it out! (Teacher says a segmented word such as /k/-/a/-/l/-/l/, and children respond by saying the blended word.)

The verse may be repeated numerous times with the teacher changing the stimulus item as desired. Eventually, individual children will be able to contribute the segmented sounds for their peers to blend.

**Sound addition or substitution activities.** Adding or substituting sounds in words in familiar songs may also help children begin to focus on the sounds that make up their speech. For example, the section of the song “I’ve Been Working on the Railroad” that begins “Someone’s in the kitchen with Dinah” lends itself beautifully to sound additions and substitutions. “Fe-Fi-Fiddly-i-o” can become “Be-Bi-Biddly-i-o” or “Ke-Ki-Kiddly-i-o” and so on. Children may insert consonant sounds, blends, or diphthongs, as follows (sung according to the lyrics “Someone’s in the kitchen with Dinah”):

I have a song that we can sing  
I have a song that we can sing  
I have a song that we can sing  
It goes something like this:  
Fe-Fi-Fiddly-i-o  
Fe-Fi-Fiddly-i-o-o-o-o  
Fe-Fi-Fiddly-i-o0000  
Now try it with the /z/ sound!  
Ze-Zi-Ziddly-i-o  
Ze-Zi-Ziddly-i-o-o-o-o  
Ze-Zi-Ziddly-i-o0000  
Now try it with the /br/ sound!  
Bre-Bri-Biddly-i-o  
Bre-Bri-Biddly-i-o-o-o-o  
Bre-Bri-Biddly-i-o0000  
Now try it with the /ch/ sound!  
Che-Chi-Chiddly-i-o  
Che-Chi-Chiddly-i-o-o-o-o  
Che-Chi-Chiddly-i-o0000  
Che-Chi-Chiddly-i-o!

The same type of substitutions may be done with the “Ee-igh, ee-igh, oh!” sections in “Old MacDonald Had a Farm.” For example, “Ee-igh, ee-igh, oh!” may be sung as “Bee-bigh, bee-bigh, boh!” or “See-sigh, see-sigh, soh!” and so forth.

Sounds may be substituted in many songs familiar to the students. The “Happy Birthday” song, for example, may be sung as “Bappy Birthday booo” or simply as a repetition of a particular syllable (e.g., “Pa pa papa pa pa”) which changes periodically. Children may repeatedly sing the syllable “La” to the tune of the “Happy Birthday” song for the entire song; then the teacher may ask students to suggest another initial sound (e.g., “Tata tata ta ta”) or another final sound (“Lele le le le le” or “Lolo lolo lo lo”). We have found that students enjoy singing silly lyrics to familiar tunes, and that they spontaneously contribute sound variations.

The teacher may ask children to select a “Sound of the Day” (e.g., /l/) and then say each of their names with that sound in place of the first sound. Peter will be called “Teter,” Billy will be called “Tilly,” and Harry will be called “Tarry.” The teacher may take attendance this way and may want to encourage each child to experiment with saying his or her classmates’ names with the sound of the day.

**Segmentation activities.** Segmenting the sounds in a word is one of the more difficult of phonemic awareness tasks to perform (Yopp, 1988), yet it is highly related to later success in decoding words. Segmenting refers to the act of isolating the sounds in a spoken word. One activity to begin working toward full segmentation is to have children segment just the first sound in a word. Iteration, or sound repetition activities, may be useful. I recall singing a song as a youngster in which the first sound of several words was repeated. The song began as follows: “When the m-moon shines over the c-cowshed...” Children will have fun repeating sounds while speaking or singing and, at the same time, will begin to gain an understanding of the smaller units of speech. Popular songs may be modified by the teacher to include iterations. For instance, when singing “Pop Goes the Weasel,” the teacher may encourage the children to sing “P-p-p-p-pop goes the weasel!” for the final line in the song.

This iterating technique may be used with children’s names as well. For example, Catherine may be said as “C-C-C-Catherine,” Joe may be said as “J-J-J-Joe,” and so forth. Or sounds may be drawn out and exaggerated as a way to draw attention to them. Linda becomes “Liiiiiiii-inda,” Olivia becomes “Ooooooo-ivia,” and Sam becomes “Sssssssss-ssss.”

Children who are successful at each of the preceding activities may be able to successfully perform a complete segmentation task in which each sound in a spoken word is separated from the others. The following example, sung to the tune of “Twinkle, Twinkle, Little
Star,” requires children to segment entire words.

Listen, listen
To my word
Then tell me all the sounds you heard: race
(slowly)
/r/ is one sound
/a/ is two
/s/ is last in race
It’s true.

Listen, listen
To my word
Then tell me all the sounds you heard: coat
(slowly)
/k/ is one sound
/o/ is two
/u/ is last in coat
It’s true.

Thanks for listening
To my words
And telling all the sounds you heard!

When working with the segmentation of entire words, it is best to use words of no more than three sounds (phonemes). Segmentation tasks are quite difficult for young children, activities for young children (National Association for the Education of Young Children, 1986):

1. The experiences should help develop positive feelings toward learning. There should be a sense of playfulness and fun as children engage in these phonemic awareness activities. The teacher should avoid drill and rote memorization activities.

2. The activities should be conducted in group settings that encourage interaction among children. Children enjoy the social aspects of learning and often learn from one another. Language play is most appropriate in a social setting.

3. The teacher should encourage children’s curiosity about language and their experimentation with it. Children’s attempts at manipulating language should be responded to positively and enthusiastically.

4. The teacher should allow for and be prepared for individual differences. Research on phonemic awareness reveals tremendous variation among children. Some children will catch on quickly to the activities; others will show an emerging understanding of the relationship between the sounds in the activities and their use in running speech; and still others will find the activities completely nonsensical but delightful.

5. The teacher should avoid making rigid judgments about individual children based upon their ability to respond to these activities. These activities are not intended to serve as diagnostic tools, although they will provide information about your students. Make sure the tone of the activities is not evaluative but rather fun and informal.

A final guideline concerns the use of visual cues. Written words or letters, for example, may be used if appropriate. Indeed, there is evidence that attaching the visual symbols to the oral stimulus results in greater gains in phonemic awareness in second semester kindergartners who knew the alphabet letters (Hohn & Ehri, 1983). However, the activities presented here are intended to stimulate phonemic awareness in younger children as well. Since many preschoolers or beginning kindergartners will not have been exposed to the alphabet, the use of written letters may distract students from the intent of the activity. Teachers are encouraged to use strictly oral activities with these younger children.

The teacher should allow for and be prepared for individual differences. Research on phonemic awareness reveals a tremendous variation among children.

and so the stimulus items should be kept as simple as possible. The lyrics of “Twinkle, Twinkle, Little Star” are structured to accommodate words with three phonemes, but they are easily adapted for words with only two sounds:

Listen, listen
To my word
Then tell me all the sounds you heard: go
(slowly)
/g/ is one sound
/o/ is two
And that is all in go
It’s true.

General recommendations for phonemic awareness activities

The following recommendations regarding the use of phonemic awareness activities with young children are based on current understanding of developmentally appropriate
A final comment

Phonemic awareness is strongly related to success in beginning reading and can be developed in children as early as their preschool years through a variety of stimulating language activities. These activities, however, are not intended to replace children's interactions with meaningful language and print. Reading aloud, developing language experience charts, using big books and predictable books, and the like are invaluable reading experiences. The activities presented here are intended to supplement such experiences and to provide a means of drawing children's attention to a critical aspect of their language—its phonemic base. Teachers of young children should recognize the important role they can play in contributing to their students' phonemic awareness by spending a few minutes daily engaging their students in oral activities that emphasize the sounds of language. Research suggests that such activities can maximize their students' potential to have a successful experience learning to read.

References


