

The Elusive Phoneme

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Why Phonemic Awareness Is So Important and How To Help Children Develop It

BY MARILYN JAGER ADAMS, BARBARA R. FOORMAN, INGVAR LUNDBERG, AND TERRI BEELER

"Whether performed silently or aloud," Marilyn Adams recently wrote, "reading an alphabetic script with fluency and reflective comprehension incontrovertibly depends on...remarkably rich and over-learned knowledge of the language's spellings and spelling-speech mappings....[But] despite myriad proposals to make it easier, alphabetic instruction has been dogged by one problem: Many students find it extremely difficult to induce the words from the code, no matter how they are drilled on the individual letters and sounds."

However, she continued, research has now delivered on this fundamental problem: "Research has finally yielded an answer to the question of why learning to use the alphabetic principle is difficult for so many. The impasse lies in the perceptual and conceptual elusiveness of the phonemes."

What is this elusive element, the phoneme? Why has the lack of phonemic awareness blocked the doorway to reading for large numbers of children? And how might we remedy this situation?

We now have good answers to these questions, and we are extremely pleased to be able to share with our readers the following commentary and sample lessons from a new book, Phonemic Awareness in Young Children: A Classroom Curriculum. This curricu-

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lum is an example of what we desperately need more of: research-based theory translated into field-tested materials that teachers can confidently and successfully use in the classroom.

Walking through the fifty-one suggested lessons in this curriculum, as I have, gives one a window into how children can be brought, step by step, to understand the architecture of their language, and how such understanding prepares them for the most critical academic undertaking of their lives: the mastery of reading and writing. Indeed, one finishes these exercises with a tremendous feeling of optimism, a sense that every child who is successfully led through them—no matter the sparseness of that child's home environment—will glide ever so more easily into mastery of the alphabetic code and the door to literacy that it wedges open.

Phonemic Awareness in Young Children is divided into seven sets of multiple lessons (plus appendices filled with numerous additional activities and support materials):

- Listening Games: To sharpen children's ability to attend selectively to sounds;*
- Rhyming: To use rhyme to introduce the children to the sounds of words;*
- Words and Sentences: To develop children's awareness that language is made up of strings of words;*
- Awareness of Syllables: To develop the ability to analyze words into separate syllables and to synthesize words from a string of separate syllables;*
- Initial and Final Sounds: To show the children that words contain phonemes and to introduce them to how phonemes sound and feel when spoken in isolation;*
- Phonemes: To develop the ability to analyze words into a sequence of separate phonemes and to synthesize words from a sequence of separate phonemes;*
- Introducing Letters and Spellings: To introduce the relation of letters to speech sounds.*

To give you a flavor of how this curriculum can help children grasp the sound-based building blocks



of their language, we have chosen two lessons from the very first set of activities (Chapter 3), in which children are introduced to the art of listening actively, attentively, and analytically; one lesson from the chapter that teaches children that words are made of strings of smaller units of speech—syllables; three lessons from "Initial and Final Sounds," which introduces the children to the nature and existence of phonemes; and two lessons from the chapter entitled "Phonemes," which builds on the previous work.

Keep in mind that these activities focus on the structure of spoken language and are preliminary to phonics instruction. Their purpose is to lay the groundwork, prepare the soil, get children ready for instruction in phonics and spelling. Indeed, as the authors note, "Educators...have found that attending to children's phonemic awareness removes phonics from the realm of drill and skill and makes it learnable and interesting to their students."

The activities in this curriculum were originally developed for use with kindergarten children, but the pace and complexity can be adjusted for use in first grade and special education. The authors recommend that fifteen to twenty minutes per day be devoted to phonemic awareness activities. Of course, as with all instruction, some students may need more intensive support than others.

Phonemic awareness is not a magic bullet. We know there is no single magic bullet for mastering the complex task of reading. But—while research must continue to refine our knowledge and practice in all aspects of phonological processing—there is now widespread consensus that we have zeroed in on an important piece of the puzzle. On behalf of all the children for whom the lack of phonemic awareness has been such a stumbling block in learning to read, we must act.

—Editor

The Nature and Importance of Phonemic Awareness

Before children can make any sense of the alphabetic principle, they must understand that those

sounds that are paired with the letters are one and the same as the sounds of speech. For those of us who already know how to read and write, this realization seems very basic, almost transparent. Nevertheless, research shows that the very notion that spoken language is made up of sequences of these little sounds does not come naturally or easily to human beings.

The small units of speech that correspond to letters of an alphabetic writing system are called *phonemes*. Thus, the awareness that language is composed of these small sounds is termed *phonemic awareness*. Research indicates that, without direct instructional support, phonemic awareness eludes roughly 25 percent of middle-class first graders and substantially more of those who come from less literacy-rich backgrounds. Furthermore, these children evidence serious difficulty in learning to read and write (see Adams, 1990, for a review).

Why is awareness of phonemes so difficult? The problem, in large measure, is that people do not attend to the sounds of phonemes as they produce or listen to speech. Instead, they process the phonemes automatically, directing their active attention to the meaning and force of the utterance as a whole. The challenge, therefore, is to find ways to get children to notice the phonemes, to discover their existence and separability. Fortunately, many of the activities involving rhyme, rhythm, listening, and sounds that have long been enjoyed with preschool-age children are ideally suited for this purpose. In fact, with this goal in mind, all such activities can be used more effectively toward helping children to develop phonemic awareness.

The purpose of this book is to provide concrete activities that stimulate the development of phonemic awareness in the preschool or elementary classroom. It is based on a program originally developed and validated by Lundberg, Frost, and Petersen (1988) in Sweden and Denmark. After translating and adapting it for U.S. classrooms, we field tested it with kindergarten students and teachers in two schools receiving Title I funds. We, too, found that kindergartners developed the ability to analyze words into sounds significantly more quickly than kindergartners who did not have this program (Foorman, Francis, Beeler, Winikates, &

Fletcher, 1997; Foorman, Francis, Shaywitz, Shaywitz, & Fletcher, 1997). This ability to analyze words into sounds is exactly the skill that promotes successful reading in first grade (Wagner, Torgesen, & Rashotte, 1994).

What Research Says about Phonemic Awareness

Although a number of different types of linguistic awareness are, in one way or another, presupposed in the dialogues and activities of beginning reading instruction, preschool-age children's awareness of phonemes—of the speech sounds that correspond roughly to individual letters—has been shown to hold singular predictive power, statistically accounting for as much as 50 percent of the variance in their reading proficiency at the end of first grade (Blachman, 1991; Juel, 1991; Stanovich, 1986; Wagner et al., 1994). Furthermore, faced with an alphabetic script, a child's level of phonemic awareness on entering school is widely held to be the strongest single determinant of the success that she or he will experience in learning to read—or, conversely, the likelihood that she or he will fail (Adams, 1990; Stanovich, 1986).

Measures of preschool-age children's level of phonemic awareness strongly predict their future success in learning to read; this has been demonstrated not only among English students but also among Swedish (Lundberg, Olofsson, & Wall, 1980); Norwegian (Høien, Lundberg, Stanovich, & Bjaalid, 1995); Spanish (deManrique & Gramigna, 1984); French (Alegria, Pignot, & Morais, 1982); Italian (Cossu, Shankweiler, Liberman, Tola, & Katz, 1988); Portuguese (Cardoso-Martins, 1995); and Russian students (Elkonin, 1973). Measures of schoolchildren's ability to attend to and manipulate phonemes strongly correlate with their reading success through the twelfth grade (Caffee, Lindamood, & Lindamood, 1973). Poorly developed phonemic awareness distinguishes economically disadvantaged preschoolers from their more advantaged peers (Wallach, Wallach, Dozier, & Kaplan, 1977) and has been shown to be characteristic of adults with literacy problems in the United States (Liberman, Rubin, Duques, & Carlisle, 1985); Portugal (Morais, Cary, Alegria, & Bertelson, 1979); England (Marcel, 1980); and Australia (Byrne & Ledez, 1983). Indeed, among readers of alphabetic languages, those who are successful invariably have phonemic awareness, whereas those who lack phonemic awareness are invariably struggling (Foorman, Francis, Beeler, et al., 1997; Foorman, Francis, Fletcher, Winikates, & Mehta, 1997; Foorman, Francis, Shaywitz, et al., 1997; Stanovich, 1986; Tunmer & Nesdale, 1985).

Knowing that so many children lack phonemic awareness and that phonemic awareness is critical to learning to read and write an alphabetic script, we begin to see the importance of making a place for its instruction. In fact, research clearly shows that phonemic awareness can be developed through instruction, and, furthermore, that doing so significantly accelerates children's subsequent reading and writing achievement (Ball & Blachman, 1991; Blachman, Ball, Black, & Tangel, 1994; Bradley & Bryant, 1983; Byrne &

Fielding-Barnsley, 1991, 1993, 1995; Castle, Riach, & Nicholson, 1994; Cunningham, 1990; Lundberg et al., 1988; Wallach & Wallach, 1979; Williams, 1980).

About the Structure of Language

In order to build phonemic awareness in *all* children, classroom teachers should know a little about the structure of language, especially phonology. *Phonology* is the study of the unconscious rules governing speech-sound production. In contrast, *phonetics* is the study of the way in which speech sounds are articulated, and *phonics* is the system by which symbols represent sounds in an alphabetic writing system.

Phonological rules constrain speech-sound production for biological and environmental reasons. Biological constraints are due to the limitations of human articulatory-motor production. For example, humans are not able to produce the high-frequency vocalizations of whales. Other constraints on our ability to produce speech have to do with the way our brains classify and perceive the minimal units of sound that make a difference to meaning—the units we call *phonemes*.

The differences between the sounds of two phonemes are often very subtle: Compare *b/* with */p/*. Yet, these subtle differences in sound can signal dramatic differences in meaning: Compare *bat* with *pat*. Fortunately, because phonemes are the basic building blocks of spoken language, babies become attuned to the phonemes of their native language in the first few months of life. However, this sensitivity to the sounds of the phonemes and the differences between them is not conscious. It is deeply embedded in the subattentional machinery of the language system.

Phonemes are also the units of speech that are represented by the letters of an alphabetic language. Thus, developing readers must learn to separate these sounds, one from another, and to categorize them in a way that permits understanding of how words are spelled. It is this sort of explicit, reflective knowledge that falls under the rubric of *phonemic awareness*. Conscious awareness of phonemes is distinct from the built-in sensitivity that supports speech production and reception. Unfortunately, phonemic awareness is not easy to establish.

Part of the difficulty in acquiring phonemic awareness is that, from word to word and speaker to speaker, the sound of any given phoneme can vary considerably. These sorts of variations in spoken form that do *not* indicate a difference in meaning are referred to as *allophones* of a phoneme. For example, in the northern part of the United States, the pronunciation of *grease* typically rhymes with *peace*, whereas in parts of the south, it rhymes with *sneeze*. Similarly, the pronunciations of the vowels vary greatly across regions, dialects, and individuals. Alternatively, variations in spoken form sometimes eliminate phonetic distinctions between phonemes. Thus, for some people, the words *pin* and *pen* are pronounced differently with distinct medial sounds corresponding to their distinct vowels. For other people, however, these words are phonetically indistinguishable, leaving context as the only clue to meaning. Indeed, because of variations in

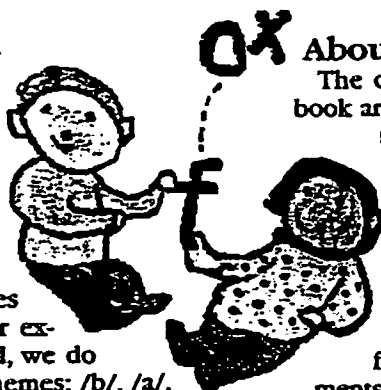
the language. even linguists find it difficult to say exactly how many phonemes there are in English; answers vary from forty-four to fifty-two.

It is also important to note that phonemes are not spoken as separate units. Rather, they are *co-articulated*; that is, when we speak, we fuse the phonemes together into a syllabic unit. For example, when we say *bark* aloud, we do not produce four distinct phonemes: /b/, /a/, /r/, /k/. Instead, our pronunciation of the initial consonant is influenced by the medial vowel, and the medial vowel is influenced by the consonants before and after it. Thus, we talk about *r-controlled vowels* like the "ar" in *bark*. Similarly, we speak of *nasalized vowels* before nasal consonants, such as in the words *and*, *went*, and *gym*. Because these vowels are assimilated into the following consonant in speech, most children have special difficulty representing them as distinct phonemes in reading and spelling, such that, for example, *went* might be read or spelled as w-e-n-t.

Consonants as well as vowels are affected by co-articulation. Consider /t/ and /d/. Say the words *write* and *ride*. The /t/ and /d/ sound distinct in these two words. However, now say *writer* and *rider*. Now the medial /t/ and /d/ phonemes are reduced to a common phoneme (called a tongue flap). Not surprisingly, children are likely to spell *writer* as R+D-R. Furthermore, /t/ and /d/ are affected by /r/ in consonant blends. Pronounce the following pairs of words: *tuck-truck*; *task-trasb*; *dunk-drunk*; *dagger-dragon*. Children notice the change in /t/ and /d/ when followed by /r/ and represent the phonetic detail with spellings of C-H-R-A-N for *train* and J-R-A-G-N for *dragon*.

The phonological awareness activities in this curriculum ask children to listen to the sameness, difference, number, and order of speech sounds. As the previous examples illustrate, such activities can become difficult when the phonetic level of speech does not relate cleanly or directly to the phonemic level. Yet, it is ultimately the phonemic level we are after because it is awareness of phonemes that allows children to understand how the alphabet works—an understanding that is essential to learning to read and spell.

For more information on phonology, we recommend Fromkin and Rodman (1993) and Parker and Riley (1994). For more information on how phonology relates to the teaching and learning of reading and spelling, we recommend Hull (1985), Moats (1995), and Treiman (1993). For more information on how to work with children who have extreme difficulty with speech-sound production, we recommend Lindamood and Lindamood (1975). For further information or assistance in working with these children, we add that speech-language pathologists can be very helpful. Their training provides them with in-depth understanding of phonology as well as expressive and receptive syntax (i.e., the rule system by which words may be ordered in phrases and sentences).



About this Curriculum

The design and sequence of the activities in this book are intended to help children acquire a sense of the architecture of their language and the nature of its building blocks. Thus, across chapters, the children's attention is focused and refocused on smaller and smaller parts, on layers within layers of the language. Gradually, they are led to notice how stories are built from sentences, sentences from words, words from syllables, and syllables themselves from a relatively small set of basic speech elements—phonemes. The children are led to see how, within each layer, the parts can be broken apart, separately spoken, and put back together. They are led to see that if the parts are omitted, substituted, or rearranged, then the whole is altered in sound *and* meaning. They are, in short, led to appreciate the structure of the system.

But that's not all. Over the course of all this structural play, the children also learn how to focus on the parts themselves; this is particularly important at the level of the phonemes. As the children practice synthesizing words from phonemes and analyzing phonemes from words, they are also practicing hearing and saying the phonemes over and over, both in isolation and in context. They are becoming generally familiar with how the different phonemes sound and how they are articulated. They are becoming comfortable with hearing and feeling the identity and distinguishing characteristics of each phoneme, whether spoken in isolation or in the beginning, middle, or end of a variety of words.

Research shows that once children have mastered phonemic awareness in this way, useful knowledge of the alphabetic principle generally follows with remarkable ease—and no wonder. Having learned to attend to and think about the structure of language in this way, the alphabetic principle makes sense. All that's left to make it usable is knowledge of the particular letters by which each sound is represented.

Finally, a note is in order about the adaptations and adjustments that we made in putting together this version of the program. While we made a number of modifications, the most important is the addition of a whole new chapter (Introducing Letters and Spellings). The original program involved oral language play only. As such, the reading/writing advantage evidenced by Lundberg et al.'s (1988) young students offered strong validation of the advantages of training phonological awareness, *per se*. Yet, the reason for training phonological awareness at all is to make spelling-sound correspondences more learnable when they are taught. In keeping with this philosophy, several more recent studies have demonstrated that the impact of phonemic awareness training on early reading and writing is enhanced still further when spelling-sound correspondences are developed alongside speech-sound correspondences (Ball & Blachman, 1990; Blachman et al., 1994; Byrne & Fielding-Barnsley, 1991, 1993, 1995; Hatcher, Hulme, & Ellis, 1994). It is important to note that doing so does not amount to a reversion to conventional phonics,

for the letter-sound correspondences are not presented for rote memorization in and of themselves. Instead, they are built into the phonemic awareness activities in a way that ensures that the children's growing appreciation of the phonemic structure of the language will yield a confident, productive understanding of the logic of its written representation.

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