Reading Research Quarterly
Vol. 33, No. 3
July/August/September 1998

(pp. 338–355)

Steven A. Stahl
Ann M. Duffy-Hester
University of Georgia, Athens, USA

Katherine Anne Dougherty Stahl
Clarke County Public Schools, Georgia, USA

Everything you wanted to know about phonics (but were afraid to ask)

It is difficult to talk about phonics. Regie Routman (1996) used to say that "Phonics is a lot like sex. Everyone is doing it behind closed doors, but no one is talking about it" (p. 91). This has changed. People are talking about it, mostly in confusion about how to do it (phonics, that is). This is true in the media (e.g., Collins, 1997; Levine, 1994) as well as among teachers we talk to. In California, a bellwether state in education, a new report from the California Task Force on Reading (California Department of Education, 1995) recommended that "every school and district must organize and implement a comprehensive and balanced reading program that is research-based and combines skill development with literature and language-rich activities," and asserted that "the heart of a powerful reading program is the relationship between explicit, systematic skills instruction and literature, language and comprehension. While skills alone are insufficient to develop good readers, no reader can become proficient without those foundational skills" (p. 3).

There is a consensus of belief that good reading instruction includes some attention to decoding. Whole language advocates such as Church (1996) and Routman (1996) devoted chapters of their recent books to teaching phonics, and Goodman (1993) wrote a book devoted entirely to phonics. These whole language advocates argued that whole language teachers should be teaching phonics and that decoding instruction had always been part of whole language teaching. To quote Routman again:

> It would be irresponsible and inexcusable not to teach phonics. Yet the media are having a field day getting the word out that many of us ignore phonics in the teaching of reading. It just isn't so. Some of us may not be doing as good a job as we need to be doing, but I don't know a knowledgeable teacher who doesn't teach phonics. (1996, p. 91)

Results of a recent U.S. national survey of elementary school teachers indicated that 99% of K–2 teachers consider phonics instruction to be essential (67%) or important (32%) (Baumann, Hoffman, Moon, & Duffy-Hester, 1998).

Beliefs and phonics

A lot of people are talking about phonics but in different ways. How people talk about phonics depends on their belief systems about reading in general. Different people have different beliefs about how reading should be defined (DeFord, 1985; Stahl, 1997), which might affect how they think about phonics instruction. Some people believe that if one can recognize all of the words in a text quickly and accurately, one will be able to understand and appreciate that text. Therefore, the primary task in teaching reading for people who hold this belief is to teach students how to recognize words (e.g., Gough & Hillinger, 1980). Others believe that reading should begin with interpretations of whole texts, and that phonics should be used only to support the reader's need to get meaning from text (e.g., Goodman, 1993). It is not difficult to see how these different belief systems might lead to different forms of phonics instruction.

The whole language movement helped to change the way we talk about phonics. This movement explod-

ed onto the educational scene, rapidly changing basic beliefs about education (Pearson, 1989) and basal reading programs (Hoffman et al., 1994), as well as views on reading and reading instruction, and focusing on uses of written language for communication and on individual responses to literature and exposition (e.g., Goodman, 1986). Whole language advocates generally include phonics (or graphophonemics) as one of the cuing systems used in identifying words. Their model of reading is partially based on Goodman (1976) who suggested that readers use three cuing systems—graphophonemic, syntactic, and semantic—to identify words as they encounter them in meaningful text.

Goodman based his model on his work with miscue analysis (e.g., Goodman & Goodman, 1977), or the analysis of oral reading miscues that readers make during reading. Whole language teachers have advocated teaching children about letter-sound correspondences, but *only as an aid to a child's ongoing process of getting meaning from a text or producing a text*, and *only as needed.* In some instructional programs based on the whole language philosophy, the teacher does not teach from a predetermined scope and sequence but instead gives children the information they need to understand texts.

Although the issue should never have been whole language versus phonics but instead issues of how best to teach children to decode, the polarizing rhetoric used by some on the whole language movement seems to have convinced people that whole language and phonics are opposed to each other (McKenna, Stahl, & Reinking, 1994; Moorman, Blanton, & McLaughlin, 1994). Many teachers adopting a whole language philosophy perceived that they should never teach words in isolation, should provide phonics instruction only when students demonstrate the need for this instruction, and should never use unauthentic literature, such as books chosen for spelling patterns, in instruction. Although these rules are often violated by knowledgeable whole language teachers (see McIntyre & Pressley, 1996; Mills, O'Keefe, & Stephens, 1992; Pressley, Rankin, & Yakoi, 1996), they were nonetheless somehow communicated to many others.

These (mis)perceptions of whole language teaching resulted in confusion for many whole language teachers. Further, when some teachers (or their administrators) perceived a need for phonics instruction, they added on a program unrelated to their regular, literature-based program. These *Frankenclasses* were stitched together, with neither part of the curriculum informing the other. Such a curriculum may be no more desirable than the omission of phonics instruction.

In this article, we will review basic principles underlying word learning and phonics instruction. These principles are applicable in many primary-grade classrooms. Next, we will discuss approaches to teaching phonics. Finally, we will draw some tentative conclusions on how an integrated language arts program that includes phonics instruction may look in first-grade classrooms.

Understanding phonics instruction

When evaluating phonics instruction, we can rely on a research base going back to the 1920s for some empirical principles, but we also need to rely on some common sense. Research tells us that an early and systematic emphasis on teaching children to decode words leads to better achievement than a later or more haphazard approach (Adams, 1990; Chall, 1989, 1996). Further, being able to decode words is necessary for children to become independent word learners and thus be able to develop as readers without teacher assistance (Share, 1995). This much seems clear. But such instruction can occur in a variety of settings, including traditional classes and whole language classes (Church, 1994; Dahl & Freppon, 1995; Mills et al., 1992). What is important is that phonics instruction is done well. Research (and common sense) suggest the following principles of good phonics instruction.

Good phonics instruction should develop the alphabetic principle

The key to learning to decode words is the principle that letters can represent sounds. Many languages such as Chinese use logographs, or stylized pictures, to represent meanings. Others use symbols to represent whole syllables. English, like many other languages, uses letters to represent individual sounds in words. Although English is not entirely regular—that is, there is not always a one-to-one correspondence between letters and sounds—understanding that letters do have a relationship with the sounds in words is a hallmark of successful beginning readers (Adams, 1990).

At its most basic level, the *alphabetic principle* is the notion that letters in words may stand for specific sounds. Initially, children developing this principle understand that words have initial sounds. As this awareness develops, children learn more about letters and sounds, analyzing each word fully, and including more complex orthographic elements such as consonant blends (*bl, st, nd*), consonant digraphs (*th, sh, ch,* and *wh*), vowel digraphs (*ea, oa, oo*), diphthongs (*aw, au, ou, ow*), and phonograms (*ight* and *ough*).

One can observe children's growth in knowledge of the alphabetic principle through both their reading and invented spelling. Ehri (1992) described children's

growth in accurate word reading as going through three stages. At first, children use a visual cue to recognize words. Cues can be simple, such as the two eyes in *look*, or more complex. This is a *pre-alphabetic* stage (Ehri, 1995), since children are not using letters and sounds but are instead using the look of each word.

As children develop phonological awareness, they begin to use some partial sound information in the word, such as an initial or final sound (see Stahl & Murray, 1998). Ehri (1995) called this stage *phonetic cue reading*. In this stage, a child might substitute a word that begins with the same letter, such as *bird* for *bear*, when reading words in text or in lists.

As children learn more words, phonetic cue reading becomes less efficient, and children analyze the word more deeply. In the *cipher* or *full alphabetic* stage (Ehri, 1995), children use all the letters and sounds. At this stage, children's reading can still be labored, relying on sounding out or other, less efficient strategies. With greater practice, children will develop automatic word recognition so that they do not have to think about the words in a text and can concentrate fully on the meaning of the text (Chall, 1996; Ehri, 1995).

Another way of observing children's growth of the alphabetic principle is to look at their invented spellings. Children go through a similar set of stages in how they invent spellings for words (see Bear & Barone, 1989; Gillet & Temple, 1990; Zutell & Rasinski, 1989). Initially, a child may spell a word by drawing a picture or scribbling something that looks like writing (Harste, Burke, & Woodward, 1982). As children learn that words need letters, they may use random letters to represent a word. Gillet and Temple (1990) called this the *prephonemic* stage. At this point, the writers themselves are the only ones who can read what they have written.

As children begin to think about sounds in words, their spelling may represent only one sound in a word, usually an initial sound, and occasionally a final sound. Sometimes they represent a word with a single letter, or pair of letters, but often they represent a word with the correct initial letter followed by some random letters. For example, one child in our reading clinic wrote *fish* with an initial *f* and continued by adding an additional six letters, stating that "words that begin with *f* have a lot of letters in them."

As children analyze words further, they go to a *letter name* stage, where they use the names of letters to represent sounds. Here they represent at least all of the consonants in a word, often not using vowels. For example, they might spell *girl* as GRL or *ten* as TN. Gillet and Temple (1990) called the next stage *transitional*. In this stage, children use vowels, and the words they write resemble the actual word, like DRAGUN for *dragon*. However, children in this stage may not always use conventional spellings.

Good phonics instruction should develop phonological awareness

The key to the development of the alphabetic principle, word recognition, and invented spelling is phonological awareness. Phonological awareness is one of the most important concepts to arise out of the past 20 years of research in reading (Stanovich, 1991). Phoneme awareness is the awareness of sounds in *spoken* words. As words are spoken, most sounds cannot be said by themselves. For example, the spoken word /cat/ has one continuous sound and is not pronounced "kuh-a-tuh." Children ordinarily concentrate on the meaning and do not think of the sounds in the word. But, since letters represent sounds, a child must learn to think of words as having *both* meaning and sound in order to understand the alphabetic principle (Stahl & Murray, 1998).

As children grow in their recognition of words, from nonalphabetic to phonetic cues to full alphabetic reading, and as they grow in their invented spelling from prealphabetic to early phonemic to letter name and transitional spelling, they are also growing in their ability to analyze spoken words. In the beginning, children are able to analyze the initial sound in words, since this sound can be perceived easily when they say a word (see Stahl & Murray, 1994; 1998). As they analyze more of the word, often by stretching a word out, they are able to include more letters in their word recognition and spelling. They also develop a sense of phoneme identity (Byrne & Fielding-Barnsley, 1991; Murray, 1995), or an understanding that the /s/ in *sun* is the same sound as the /s/ in *bus*.

Many tasks have been used to teach children to become aware of sounds in spoken words. Among these tasks are:

- *Rhyming*, either by recognizing rhymes or rhyme production,
- *Word-to-word matching tasks*, which involve having a child determine whether a series of words begins or ends the same, or which word in a group is the odd man out (e.g., determining which word does not belong in a group of words such as *man*, *move*, and *pit*),
- *Sound-to-word matching tasks*, which involve having a child determine whether a particular sound can be found in a word (e.g., determining whether there is an /m/ in *man*),
- *Initial (or final) sounds*, in which the child gives the first (or last) sound in a spoken word (e.g., the first sound in *fish*),
- *Segmentation*, which involves breaking a word up into sounds, a very difficult task for children to do orally. This task usually requires some sort of concrete aid such

as Elkonin boxes (Clay, 1993; Elkonin, 1973) or boxes set up like this (□□□) in which a child puts a counter or letter in the box when he or she hears a new sound in a word, wooden blocks (Calfee, Lindamood, & Lindamood, 1973), or letters (Hohn & Ehri, 1983),

- *Blending*, the flip side of segmentation, which involves putting spoken sounds together into a word (e.g., recognizing that /k/a/t/ is *cat*), and
- *Deletion and manipulation*, in which a child is told to mentally remove a portion of a word to make another word (e.g., the child is asked to say *coat*, and then to say it again without the /k/). In more complex manipulation tasks, children are asked to remove a phonemic segment and put it elsewhere in the word to make a new word, or to perform other complex manipulations, such as in Pig Latin.

A good phonics program should contain at least one of these tasks. Although phoneme awareness is often conceived as manipulating *spoken* words, often this awareness is taught as an introduction to teaching letter sounds. Thus, a program that begins by having a child listen to a word and say the first sound as a way of introducing a letter sound is giving some attention to phoneme awareness, but probably not enough to help a child with difficulty in this area.

There are other ways of developing phoneme awareness that should be part of a beginning reading program. One way is to read alphabet books to children. We found that 4-year-old children who were read one alphabet book per day significantly improved in their awareness of phonemes (Murray, Stahl, & Ivey, 1996). To understand why *b* is for *bear*, for example, the child needs to understand that the first sound of *bear* is /b/ (Yaden, Smolkin, & MacGillivray, 1993). This understanding is the beginning of phonological awareness.

Another way to develop this awareness is to encourage children to use invented spellings, because children need to think about sounds in words and usually do some form of segmentation in order to invent a spelling. Tangel and Blachman (1992) found that phonemic awareness training increased children's growth in invented spelling. It would make equal sense that practice in invented spelling would similarly increase phonological awareness.

How much attention to phoneme awareness is necessary depends on the child. A child with a history of reading problems may need a variety of activities and many repetitions. Other children may not need as much.

Good phonics instruction should provide a thorough grounding in the letters

The other part of learning letter-sound relationships is learning the forms of letters. Efficient word recognition is dependent on children's thorough familiarity with letters. They should not have to think, for example, that the letter *t* is the one with the up and down line and the cross thingy. Instead, children should recognize *t* immediately. Adams (1990) suggested that children need to recognize the forms of the letters automatically, without conscious effort, to be able to recognize words fluently.

There is some uncertainty about whether knowing the names of letters is absolutely necessary. On one hand, children can learn to recognize words without knowing the names of letters, and some reading programs do not require that children learn the names of the letters (Adams, 1990). On the other hand, knowing the names of letters is one of the best predictors of success in reading (Chall, 1996). Knowing the names of letters also helps children talk about letters. All in all, it is preferable to teach the names of letters, although children can begin to learn to read without knowing *all* the names of the letters. Thus, children should be reading and listening to connected texts before they know, and as they are learning, the names of all of the letters of the alphabet.

Children often learn the names of letters first through an alphabet song. As many parents can attest, memorizing the song often leads to confusion, most notably the notion that there is a letter called "elemenope." But nearly all children recover from that confusion and eventually learn to identify the letters individually. Some programs begin with the alphabet song and teach the letters in order. Other programs begin with letters with easily pronounced sounds such as *m*, *n*, and *s* and proceed to teach the consonants, then the vowels. We know of no research to determine the best order for introducing letters. When teaching the alphabet, a good phonics program will make sure that children can identify both capital and lowercase letters individually, in any order.

Good phonics instruction should not teach rules, need not use worksheets, should not dominate instruction, and does not have to be boring

There are a number of misconceptions about phonics instruction. Although traditional phonics instruction did teach rules, used worksheets, and was, frankly, often boring, it does not have to be.

Clymer (1963, reprinted 1996) reviewed commonly taught phonics rules and compared them to the words that primary children were likely to encounter in their reading. He found that commonly taught rules were rarely applicable to any more than 75% of the words children encounter in their reading. For example, the rule *when two vowels go walking, the first one does the talking*, is applicable to about 45% of words children encounter. The rule applies for the words *boat*, *fail* and *meet*, but does not apply for *does*, *would*, or *bread*. The

lack of applicability does not mean that teachers should never state a rule. Often a rule is useful for clarifying the aspect of the word that is under study. But it does mean that students should not be required to memorize rules, nor should a teacher give students words and have them tell which phonics rule applies. Further, as Adams (1990) pointed out, vowel sounds are more consistent in phonograms. This research suggests that vowels might be taught through phonograms, at least as part of an effective phonics program.

What seems to work in phonics instruction is direct teacher instruction, not practice on worksheets. Two observational studies by Haynes and Jenkins (1986) and Leinhardt, Zigmond, and Cooley (1981) found that the amount of time students spent on worksheets did not relate to gains in reading achievement. This may be because completing worksheets takes students' time away from reading stories or content material, and because instructional aspects of worksheets are often poorly designed (Osborn, 1984). What appeared to be most relevant was time spent reading connected text (Leinhardt et al., 1981).

In the 1970s and 1980s, much instructional time was devoted to having students complete workbooks. A typical lesson might consist of a teacher providing a brief introduction to a skill, what Durkin (1978/1979) called *mentioning*, followed by student practice using worksheets. In a typical lesson there was not only a phonics skill taught, but another phonics skill reviewed, a comprehension skill taught or reviewed, and another worksheet used to review the story. At that time, one of the authors was working for a school district as an observer of reading instruction and noted that only 40% of the time allocated for reading instruction was used for reading connected text. The additional 60% was spent on doing worksheets or supplemental work, such as *Weekly Reader*. Gambrell, Wilson, and Gantt (1981) observed that average readers spent about 6 minutes per day reading connected text. Children with reading problems spent considerably less, about 1 minute per day on average.

Currently, children spend considerably more time reading connected texts. This is as it should be. Effective phonics instruction should not take a great deal of classroom time. Programs such as those of Eldredge and Butterfield (1986; Eldredge, 1995) and the Benchmark School Word Identification program (Gaskins et al., 1988; Gaskins, Ehri, Cress, O'Hara, & Donnelly, 1996/1997) are designed to be taught in no more than 15–20 minutes per day.

Brisk lessons, such as those of Eldredge and Butterfield (1986) and Gaskins et al. (1988, 1996/1997), need not be boring. Of course, boring is in the eye of the beholder, but we have observed high rates of engagement and interest in direct instruction lessons (Stahl, Osborn, & Pearson, 1994). A survey of exemplary primary-grade teachers found that these teachers were highly effective in teaching decoding and also maintained high levels of class engagement (Pressley et al., 1996). Our point is that phonics instruction need not be boring, especially if the instruction is kept brisk, to the point, and does not take an excessive amount of time each day.

Good phonics instruction provides sufficient practice in reading words

There are three types of practice that might be provided in a phonics program—reading words in isolation, reading words in stories (i.e., expository and narrative texts), and writing words. The ultimate purpose of phonics instruction is for children to learn to read words. Many researchers (see Adams, 1990, for a review) conclude that people identify words by using spelling patterns. These patterns are learned through continued practice in reading words containing those patterns. In addition, all successful phonics programs provide a great deal of practice in reading words containing the letter-sound relationships that are taught. Therefore, the practice given in reading words is extremely important.

Reading words in isolation. Phonics programs differ in how much practice they provide in reading words in isolation. Some programs will provide only two or three words as examples of each letter-sound relationship. Others will provide 50 or more examples. Although we do not know what is an optimal number of examples, the more practice that children have in reading words with various patterns, such as silent *e* or short *o* pattern words, the better they will be at reading words with those patterns. It is important for children to look at words in isolation at times so that they can examine the patterns in words without the distractions of context. (Of course, such practice should be minimal and never should dominate instruction.) Good phonics instruction might contain a moderate amount of word practice in isolation, enough to get children to recognize words automatically but not enough to drive them to boredom.

Reading words in stories. It is important that children read words in stories or short pieces of expository text. The purpose of reading is comprehension. Reading words in stories may allow children to apply their phonics knowledge to tasks that allow for comprehension of a message as well as to sounding out words. One study found that children who read stories with a high percentage of words that contained letter-sound correspondences that they were taught had significantly higher word recognition than children who read texts that did not contain words that matched their phonics lessons (Juel & Roper/Schneider, 1985). Our informal analyses of

texts suggest that many texts do not match what is being taught. We suggest that children read at least some texts that contain a high percentage of words with patterns taught in phonics lessons.

These texts may be contrived, such as *Nat the Rat*, but need not be. There are interesting texts that contain a reasonable percentage of regular words that can be used to reinforce phonics instruction. For example, the classic books *Angus and the Cat* (Flack, 1931) or *The Cat in the Hat* (Seuss, 1957) could be used to reinforce the short *a* sound. (Trachtenburg, 1990, has a list of books that contain high percentages of various vowel patterns.) These texts should not be all that children read. Instead, we recommend that children read a mixture of books containing a high percentage of taught patterns and books ranging more widely in vocabulary. One study found that having children read widely seemed to enhance the performance of a successful phonics-oriented beginning reading program (Meyer, 1983).

Therefore, teachers should have stories for children to read in which they can practice using phonics knowledge in reading for comprehension. Stories (and other prose) should be comprehensible, that is, they should not just be a series of unrelated sentences, although these stories do not have to be elaborate (and cannot be in the beginning of instruction). These stories should be discussed for comprehension, as part of the reading lesson, so that the child will remember that the purpose of reading is getting meaning. We recommend that children read these stories as well as other material at an appropriate, instructional level.

Writing words. Practice in writing words is usually of two types—either writing words from dictation or using invented spellings. Both of these approaches have their place in beginning reading instruction, and both are valuable ways of practicing letter-sound correspondences.

Dictation is used in many successful phonics programs. In these programs, after a letter-sound correspondence is taught, children practice that correspondence by writing words from dictation. For example, for the short *a* sound, children may write words such as *pat*, *hand*, and *cap*. This seems to be a reasonably useful practice, one that could be easily added to any program that does not provide for it.

Invented spelling is more controversial. Invented spelling refers to the practice of having children invent their own spellings in their writings, using what they know about letters and sounds. At the early stages of learning to read, a teacher encouraging students to use invented spellings need not correct these spellings, as invented spelling allows children to focus on their developing knowledge of letters and sounds. This development seems to mirror a child's development in both phoneme awareness and letter-sound knowledge (Bear & Barone, 1989; Stahl & Murray, 1998). One study found that having children write using invented spelling greatly improved their phonics knowledge and other word recognition skills (Clarke, 1989).

As children develop letter-sound knowledge, teachers should expect greater control of conventional spelling, at least in final drafts. Invented spelling, as discussed above, has its greatest effect on children's phoneme awareness and knowledge of letter-sound correspondences. Too often teachers have let children continue inventing spellings beyond the point where the practice is useful to fulfill these instructional goals. The result is that some children do not learn to spell conventionally, and the practice of invented spelling in the early grades, where it is particularly useful, has come under attack.

Good phonics instruction leads to automatic word recognition

In order to read books, children need to be able to read words quickly and automatically. If a child stumbles over or has to decode slowly too many words, comprehension will suffer (Samuels, Schermer, & Reinking, 1992). Although we want children to have a strategy for decoding words they do not know, we also want children to recognize many words automatically and be able to read them in context.

The practice activities discussed above—reading words in isolation, reading words in stories, and practicing words through writing—are intended to teach children to recognize the large numbers of words that have a regular pattern. Children learn to read automatically through the reading of stories (Fleisher, Jenkins, & Pany, 1979/1980; Rasinski, 1991; Samuels et al., 1992). Sometimes this practice can use repeated reading or the reading of the same story over and over until the child is able to read it fluently (Herman, 1985; Samuels et al., 1992; Stahl, Heubach, & Cramond, 1997). At other times, it may involve applying phonics lessons to reading books that contain taught letters. It is, however, important to see phonics instruction not as an end but as a means to help children read words automatically.

Good phonics instruction is one part of reading instruction

It is necessary to remember that phonics instruction is only one part of a total reading program. Reading instruction has many different goals. We want children to enjoy reading and be motivated to read. We want children to comprehend what they read. We want children to be able to recognize words quickly and automatically. We know that children do not enjoy reading if they cannot comprehend or if they have to struggle sounding out

each and every word. Therefore, we want children to have a good background in letter-sound correspondences and be able to apply this knowledge to recognizing words quickly and automatically. But at the same time, children will not enjoy reading if the only reading they do is sounding out words. Good reading instruction contains a balance of activities around these different goals. For enjoyment, children should be able to choose at least some of the books that they read (Morrow & Tracey, 1998; Turner, 1995) and should be read aloud to from a variety of books from different genres (Feitelson, Kita, & Goldstein, 1986). For comprehension, children should engage in discussions and questioning about the content of what they read. Although phonics instruction is an extremely important part of beginning reading, it is only one part.

Specific approaches to phonics instruction

The conditions under which these principles can be met occur in a variety of reading programs. Reviews of research in this area suggest that it is the emphasis on early and systematic phonics instruction that makes a program effective and that differences between approaches are relatively small (Chall, 1996; Dahl & Freppon, 1995). In this section, we will discuss and review phonics instruction, both traditional and contemporary, from a variety of instructional philosophies. What we call traditional approaches are approaches that were in vogue during the 1960s and 1970s but seem to be returning as teachers grapple with how to teach phonics. Contemporary phonics approaches are those that have been used frequently in the past decade.

Traditional phonics approaches

Research on traditional phonics approaches includes mammoth federally funded studies (Abt Associates, 1977; Bond & Dykstra, 1967; Dykstra, 1968), large-scale district evaluations (Kean, Summers, Raivetz, & Farber, 1979), and reviews of research such as that of Adams (1990) and Chall (1996). These reviews consistently find that early and systematic phonics instruction is more effective than later and less systematic instruction.

The differences in quality between phonics approaches are small. Generally, reviews have found a slight advantage for synthetic approaches over analytic approaches (e.g., Chall, 1996), but these differences may be due not to differences in method but instead to differences in coverage, practice, or other factors.

Analytic phonics approaches

Analytic approaches begin with a word that a child already knows and breaks this word down into its component parts. For example, a teacher might begin an analytic phonics lesson by writing the word *bed* on the board and saying something like "the sound in the middle of the word *bed* makes an /e/ sound, which we call the short *e*." The teacher might then say some other words aloud, such as *hen*, *met*, *bat*, *run*, and *rest*, and ask students to raise their hands if the middle sound of the word was a short *e* sound. This instruction might be followed by having students read a series of words on the board, each containing a short *e* sound, and then having students complete a worksheet or two. This analytic approach might be typical of a basal reading lesson in the 1970s. Such lessons tend to be confusing to follow, especially since they seem to have largely been used as an introduction to the worksheets, rather than as lessons in themselves (Durkin, 1988).

Linguistic approaches. Another variety of phonics instruction that might be called analytic is the so-called linguistic method. This method is based on the theories of linguist Leonard Bloomfield (Bloomfield & Barnhart, 1961) who reasoned that one cannot pronounce many of the sounds that consonants make in isolation (that is, the first sound of *cat* is not /kuh/ but the unpronounceable /k/). Because children cannot sound words out, they should learn words in patterns (such as *cat*, *rat*, and *fat*) and induce the pronunciations of unknown words from known patterns.

The results of this method were easily lampooned texts such as: "Dan is a man. /Nat is a cat./ Nat is fat./ Nat sat on a mat." Adams (1990) called linguistic texts *visual tongue-twisters*, explaining that these texts made little sense and were so loaded with similar words that they were a challenge for anyone, even a proficient reader or a learner, to read aloud. Although texts like these have gone on to well-deserved oblivion, we have seen the demand for decodable texts (e.g., California Department of Education, 1995) lead to the use of some poorly written texts. It is a challenge to write texts that are both decodable and coherent, but it can be done.

Synthetic phonics approaches

The other major division of traditional phonics approaches are the synthetic phonics approaches. Such phonics approaches begin with teaching students individual letters or groups of letters and then showing students how to blend these letters together to form words. A synthetic phonics lesson may begin with the teacher writing a letter on the board, such as *a*, and then saying, "This is the letter *a*, and it makes the sound /a/." The teacher might write a word containing that letter, such as

rat, and pointing at the letters from left to right have the class blend the word together in unison. This might be followed by some group instruction in reading words with the short *a*, such as *bat, ham, fan, and*, and *ran*. Then the students might read a story containing a high percentage of words with the short *a* sound.

When one of the authors reviewed supplemental phonics programs (Osborn, Stahl, & Stein, 1997), we found many of the programs we reviewed for home or supplemental use in schools were synthetic phonics programs. These supplemental programs are usually locally produced and appear to be used only in certain regions of the U.S. Many are based on Orton-Gillingham principles but without the extensive training that such programs entail (Gillingham, 1956). In addition, Direct Instruction approaches seem to be undergoing a resurgence. These two synthetic phonics approaches will be reviewed below.

Orton-Gillingham approaches. Approaches based on Orton-Gillingham methods begin with direct teaching of individual letters paired with their sounds through a VAKT (i.e., visual, auditory, kinesthetic, and tactile) procedure that involves tracing the letter while saying its name and sound, blending letters together to read words and sentences, and finally reading short stories constructed to contain only taught sounds. Among those approaches based on Orton and Gillingham's work are the Slingerland approach (Lovitt & DeMier, 1984), the Spaulding approach (Spaulding & Spaulding, 1962), Recipe for Reading (Traub, 1977), and Alphabetic Phonics (Ogden, Hindman, & Turner, 1989). There are differences among these approaches, largely in sequencing or materials, but these approaches all have the general characteristics discussed. Spelling the words from dictation is also part of an Orton-Gillingham lesson. Each letter sound is learned to mastery through repetition. More advanced lessons involve teaching learners to blend syllables together and read more complex texts. Teachers are specially trained to use Orton-Gillingham methods.

An Orton-Gillingham lesson might begin with the teacher showing the child a card with a letter such as *m*. The teacher might say, "This is the letter *m*, and it says /m/." Then the teacher might take the child's finger and trace the letter, saying, "*M* (letter name), /m/ (sound)." This sequence is repeated until the child has mastered the letter and its sound. The child writes the letter in the air and then on paper, while repeating its name and sound. When a group of letters is mastered, the teacher presents some words containing those sounds. Each of the sounds is identified sequentially. The teacher models blending the sounds together to make a word. This process is repeated, with the child increasingly being held responsible for blending the sounds together. Also in the lesson is spelling from dictation. The same words used in reading are dictated, and the child is supposed to write the sounds that he or she hears. If the child cannot spell the word, the teacher stretches the word when pronouncing it so that each sound can be heard individually, and the child then writes those sounds down. In addition, there are simple books containing words with the taught sounds that the child and teacher read for practice.

In spite of the longevity of use of the Orton-Gillingham approach, there is relatively little research on it. There have been numerous case studies attesting to the approach's effectiveness, beginning with Monroe (1932). These case studies do not, however, meet the criteria for rigorous qualitative research. Other studies of the Orton-Gillingham approach have not included control groups (Ogden et al., 1989; Vickery, Reynolds, & Cochran, 1987). Without a control group, it is hard to tell whether the program worked better than any other.

Kline and Kline (1975) reported a clinical retrospective, comparing the reading abilities of children who were diagnosed as dyslexic in their clinic and given either Orton-Gillingham–based instruction or whatever instruction was given in the child's school. They found that nearly all of the Orton-Gillingham–trained subjects made significant progress while only half of the school-treated subjects did. Again, since the study did not employ typical controls, the differences could have related to reasons the different subjects got different treatments or some other extraneous variables.

Other studies have used single-subject designs, with replications. Lovitt and Hurlburt (1974) and Lovitt and DeMier (1984) compared the Slingerland approach with a linguistic approach that did not include direct instruction in letter-sound correspondences. They found both approaches equally effective. Silberberg, Iversen, and Goins (1973) found that a conventional phonics approach produced the strongest results, significantly greater than those from the Orton-Gillingham approach on 6 of the 10 measures employed.

Given that the Orton-Gillingham approach and its variations have been in use for more than 60 years, this is a disappointing amount of research. When Orton-Gillingham was compared to conventional instruction for children with reading problems (Kline & Kline, 1975), it seemed to be more effective. When compared to with other approaches that were new to the student, the Orton-Gillingham approach did not seem any more effective than any other approach. Given the small number of studies, however, it is difficult to draw any conclusions.

Direct instruction approaches. The Direct Instruction approach of Englemann was first published under the name of Distar (Englemann & Bruner, 1969), later Reading Mastery. The Distar approach is a synthetic

phonics approach, based on a behavioral analysis of decoding (Kameenui, Simmons, Chard, & Dickson, 1997). Students are taught letter sounds (not letter names, at least in the beginning stages of the program) through highly structured instruction using cuing and reinforcement procedures derived from behavioral analyses of instruction. The task of decoding is broken down into its component parts, and each of these parts is taught carefully and deliberately (see Kameenui et al., 1997).

Instruction proceeds from letter sounds to blending to reading words in context. Instruction is scripted, with the teacher using a flip book containing both the stimuli for children's responses and a script of what the teacher is to say. The lessons are fast-paced, with high student involvement. The text for the first-year program is written in a script that, although it preserves English spelling, cues the reader to silent letters (by making the letters relatively small) and different vowel sounds (placing a macron over long vowels). Children practice in specially constructed books containing taught sounds, although children may be encouraged to read widely in children's literature as well (e.g., Meyer, 1983).

Early research with Distar found strong effects (Adams & Englemann, 1996), but in this research Direct Instruction programs have been compared to programs that differed from it on many dimensions. The major study of the effects of Distar is the study of Project Follow Through classes (Abt Associates, 1977). This was a national project, involving hundreds of classes. Distar was the only program that produced achievement in poor students that was near the national average. In this study, and in many of the early studies, Distar was compared to approaches that had radically different goals than Distar and did not stress phonics as strongly as it did.

Adams and Englemann (1996) performed a meta-analysis on the effects of Direct Instruction (in areas including comprehension and mathematics) on student achievement and found that Direct Instruction approaches produced large effect sizes on achievement measures. Although these results are impressive, they need to be viewed critically. First, both Adams and Englemann are associated with Reading Mastery, and their review has not been peer reviewed, so this is not an independent review. Second, we have, in a cursory survey using ERIC, found a number of relevant studies not included in the Adams and Englemann review, including some studies that did not find salutary effects for Distar in beginning reading. Thus, further research investigating the success of Reading Mastery seems warranted.

Contemporary phonics approaches

In this section, we discuss three contemporary phonics approaches: (a) spelling-based approaches, (b) analogy-based approaches, and (c) embedded phonics approaches. All of these approaches are usually described in the literature as components of larger reading instruction programs. For example, spelling-based approaches are implemented in programs such as the Multimethod, Multilevel Instruction Program (e.g., Cunningham & Hall, 1997), the Charlottesville Volunteer Tutorial or Book Buddies Project (e.g., Invernizzi, Juel, & Rosemary, 1996/1997; Johnston, Juel, & Invernizzi, 1995), and the Howard Street Tutoring Program (e.g., Morris, 1992). Analogy-based approaches are one aspect of the Benchmark Word Identification Program (e.g., Gaskins et al., 1996/1997), and embedded phonics approaches are utilized in programs such as Reading Recovery (Clay, 1993) or in whole language classrooms (e.g., Dahl & Freppon, 1995; Freppon & Headings, 1996). Thus, it is important to consider the instructional context in which these contemporary phonics approaches often occur.

Spelling-based approaches

Three contemporary approaches to phonics instruction, Word Study (e.g., Bear, Invernizzi, Templeton, & Johnston, 1996), Making Words (e.g., Cunningham & Cunningham, 1992; Cunningham & Hall, 1994), and Meta-Phonics (Calfee, 1998; Calfee & Henry, 1996), are based on spelling principles.

Word Study. In Word Study, students examine words and word patterns through strategies such as sorting, in which students categorize words and pictures according to their common orthographic features. Word Study instruction is based on students' developmental levels of orthographic knowledge and is an approach to teaching phonics, vocabulary, spelling, and word recognition. In Word Study, the teacher bases instruction on word features that students are writing but are confusing (e.g., Bear et al., 1996). For example, when a child spells *rane* for *rain* and makes similar errors in other aspects of his or her writing, the teacher may begin instruction with the child on long *a* word patterns.

Word Study is based on research on how orthographic knowledge develops (e.g., Templeton & Bear, 1992) and is included in this section on contemporary approaches to phonics instruction because of recent, published descriptions of Word Study in widely read texts and journals. For example, Word Study has been described in teacher resources (e.g., Bear et al., 1996) and in journal articles (e.g., Barnes, 1989; Bloodgood, 1991; Gill, 1992; Invernizzi, Abouzeid, & Gill, 1994; Invernizzi et al., 1996/1997; Morris, Ervin, & Conrad, 1996; Schlagal & Schlagal, 1992; Templeton, 1989, 1991, 1992).

Much of the Word Study research is described in the contexts in which this approach occurs. For example, Invernizzi et al. (1996/1997) described the use of

Word Study in the Charlottesville Volunteer Tutorial program over a 3-year time period. In this program, low-achieving first- and second-grade students are tutored in reading by trained community volunteers. During the third year of program implementation, tutored students' pre- to posttest gain scores increased statistically significantly on measures of alphabet knowledge, phonemic awareness, and word recognition, and 86% of all students read with 90% accuracy a benchmark first-grade level trade book during the third year of the implementation of the tutoring program.

Additionally, Morris et al. (1996) provided a case study of a sixth-grade student with severe reading difficulties in a university-based reading clinic. A reading tutor worked with this student once a week for 2 years in a clinic tutoring program in which Word Study was included, and the student made 2 years' growth in reading and spelling as measured by informal reading assessments.

The effectiveness of the Word Study approach to phonics instruction has been documented in conjunction with other aspects of teaching and supporting reading; for example, writing, reading of instructional level texts, and rereading independent texts. Thus, it is difficult to document in an empirical sense the effects of word study instruction per se, although this type of phonics instruction seems to be effective as one component in reading interventions and programs.

Making Words. In Making Words (e.g., Cunningham & Cunningham, 1992; Cunningham & Hall, 1994), students are given six to eight different letters on letter cards. Then, the teacher calls out words with two, three, four, and more letters that can be formed using the students' letters, with the teacher and students first making the words and then sorting words based on their common spelling patterns or other orthographic features. At the end of this activity, the teacher challenges the students to use all of their letters to make a big word. The big word is related to something the children are reading.

Making Words is one component of the Working With Words block in the Multimethod, Multilevel Instruction Program (e.g., Cunningham & Hall, 1997). As was the case with Word Study, the effectiveness of this approach to phonics instruction is described in the context of overall reading program effects. In a recent description of program results, Hall and Cunningham (1996) documented that 85% of students in the Multimethod, Multilevel Instruction Program were reading at or above grade level by the end of their first-grade year, and 94% of students were reading on grade level by the end of their second-grade year as measured by informal reading inventory data.

Objectively, it is not as easy to determine the success of Word Study and Making Words in isolation in improving students' word identification abilities as compared to some of the described traditional phonics approaches. However, both of these approaches seem to be effective as part of overall approaches to teaching reading.

Meta-phonics. In this approach, reading and spelling are taught simultaneously through social interaction and group problem solving. Sounds are introduced through phonemic awareness instruction. This instruction stresses articulation as a key to learning sounds (Calfee, 1998; Calfee et al., 1973). Thus, /p/ /t/ and /k/ are *popping sounds.* Vowels are taught as *glue letters.* After these are established, students are given letters and sounds and asked to make a make a word, through adding consonants to vowels. Students begin with short consonant-vowel-consonant words but progress to longer words such as *discombobulate* or *sassafras.*

This component has been embedded in a larger program, Project READ (Calfee, 1998). Preliminary results suggest that the program has been successful in three school settings. Students who have used this program were at or above district or national averages in reading comprehension, fluency, word recognition, spelling, and writing. These evaluations were informal, without a true control group, and also were conducted as part of a redesign of reading instruction, making it difficult to ascertain how important this component was to overall achievement gains. This approach awaits a fuller, more controlled evaluation.

Analogy-based approaches

In analogy-based approaches to phonics instruction, students learn how to decode words they do not know by using words or word parts they do know. For example, students learn that if they can read the words *he*, *send*, and *table*, they can compare and contrast these words with the word parts in the unknown word *de/pend/able* to help them decode this word. Decades ago, the research of Patricia Cunningham (e.g., Cunningham, 1975/1976, 1978, 1979, 1980) focused on using analogy-based approaches to help students decode unknown words.

Analogy-based approaches are currently used as one instructional component in the Benchmark Word Identification Program (e.g., Gaskins, Gaskins, & Gaskins, 1991; 1992). Current versions of this decoding program include phonics approaches other than analogy-based approaches (see Gaskins et al., 1996/1997), such as teaching students ways to analyze all sounds in a word. In the analogy-based phonics component, students learn 120 key words with common phonogram patterns and word parts. Five to six new words are introduced to students every week, with the teacher provid-

ing explicit instruction to students on how to use these key words to decode other words.

There are three different types of research support for analogy-based approaches, all of which suggest using some caution in implementing those approaches. First are basic research studies. Goswami's work (1993, 1998) suggests that young children can use analogies before they can use other phonological information to read words. Bruck and Treiman (1992) and Ehri and Robbins (1992), however, found that children need to be able to use phonetic cue reading, or initial letter-sound relationships, in order to take advantage of analogies in reading. The differences between Goswami's work and Bruck and Treiman's and Ehri and Robbins's studies lie in experimental design. (In Goswami's studies, the analogue word is always available for the child; in the other studies, the child has to rely on memory.) In practice, analogies should be used after children can recognize initial sound cues, which is how they are used in Cunningham's (1995) and Gaskins et al.'s (1996/1997) approaches.

The second line of research on analogies comes from directed studies. Haskell, Foorman, and Swank (1992) and Sullivan, Okada, and Niedermeyer (1971) found that an analogy approach and a synthetic approach performed equally well, and both were more effective than whole-word approaches. Fayne and Bryant (1981) found that a rime-based strategy was not as effective as teaching children initial bigrams (e.g., *co-g*). These were short-term studies. White and Cunningham (1990), in a yearlong study, found that analogy training produced statistically significant effects on measures of both word recognition and comprehension.

Finally, analogy approaches are part of successful reading programs, including the approach used at the Benchmark School (Gaskins et al., 1988; see also Cunningham, 1995). The experience at Benchmark is illustrative of both the strengths and limits of an analogy-based approach. The program began as a direct adaptation of analogies with metacognitive strategy training to help children transfer the use of analogy-based decoding in their reading (Gaskins et al., 1992). This program seemed to be successful with many of the children with reading problems at Benchmark, but there were a number of children who did not succeed. In an attempt to reach more children, the program was modified to include a more thorough analysis of the words taught as anchor words (Gaskins et al., 1996/1997), thus teaching more phonological information along with the analogy words. Our conclusion is that analogies can be a very powerful teaching approach but need to be taught after a child has reached the phonetic cue level and in conjunction with other decoding approaches.

Embedded phonics approaches

In embedded phonics approaches, phonics instruction occurs in the context of authentic reading and writing experiences. The phonics instruction in Reading Recovery and in many whole language classrooms are examples of embedded approaches to phonics instruction.

Phonics in Reading Recovery. Reading Recovery (Clay, 1993) is a one-on-one tutorial program intended for the lowest 20% of first-grade children in a school. Although lessons are based on daily individual diagnosis of children's needs, there is a common lesson structure (Clay, 1993). First, lessons begin with a rereading of two or more books of the student's choice. The purpose of this rereading is to develop fluency. Next, the student rereads the book that was introduced the previous day. The teacher makes a running record of this reading and addresses one or two teaching points immediately following the running record. Following the running record, there is *making and breaking* with magnetic letters. Next, the child writes a sentence-length story with the help of the teacher. This help may include hearing and recording sounds in words using Elkonin boxes (Elkonin, 1973). After that, the story is cut up and reassembled. Finally, the teacher introduces a new book, using Clay's (1991) procedures, and the child attempts an independent first reading of the book.

Lessons are based on Goodman's (1976) model, suggesting that readers use three cuing systems to recognize words in context. Clay (1993) called these systems visual, structural, and meaning cues. One study found that most of the children referred to Reading Recovery needed work on the visual system (Center, Wheldall, Freeman, Outhred, & McNaught, 1995), especially phonological processes (Iversen & Tunmer, 1993). Within the lesson structure, the teacher has a number of options to teach children to better use visual cues. The individual nature of a Reading Recovery lesson enables the teacher to direct the child's attention to aspects of words relevant to their development. Work with magnetic letters, cut-up sentences, and carefully selected gradient texts gently nudge the Reading Recovery student to the next level of visual sensitivity, balancing the child's reading work through the utilization of and reliance on multiple cuing systems. Thus, phonics instruction is woven throughout the lessons.

Letter sprees are activities that involve the direct teaching of letter names, learned to the point of automaticity (Adams, 1990; Clay, 1993). In their writing, children use invented spellings to approximate words, although the final product always is spelled conventionally. Also, teachers integrate work with Elkonin boxes into spelling work, having children use the boxes to reflect on each sound in a word.

In making and breaking words, the teacher uses magnetic letters to give children practice in reading phonetically controlled words. This component has been part of Reading Recovery from the beginning, but recently it has received more emphasis. Iversen and Tunmer (1993) found that they were able to help children discontinue the program earlier by adding a phonological recoding component to the Reading Recovery lesson.

Reading Recovery teachers can also choose texts that reflect children's increasing mastery of phonics. A teacher might choose a text that requires the child to direct attention to particular visual features of words. If a child is, for example, noticing initial-sound relationships, the teacher would choose a book in which the child must use these relationships to read the book successfully. In the beginning Reading Recovery lessons, texts are highly predictable, and the pattern provides a scaffold for children's reading. As texts become less predictable over the course of the lessons, teachers decrease the amount of scaffolding they provide, encouraging children to use more visual features of words. The result of these cumulative decisions, in text reading and through other aspects of the lessons, is that children advance in their word recognition abilities and phonological awareness (Stahl, Stahl, & McKenna, 1997).

Reading Recovery has been cited by Adams (1990) as an excellent example of what good phonics instruction can be. Although children do receive a great deal of work with letters and sounds, the instruction is always integrated into the reading and writing of texts. Teachers keep track of students' increasing mastery of the visual cuing system in conjunction with the other two systems. Children spend the majority of their lesson time reading and writing connected text, with very little time spent on phonics.

Reading Recovery has been found to be effective, at least for the children in the program (Center et al., 1995; Shanahan & Barr, 1995, Wasik & Slavin, 1993). In their conservative analysis, Center et al. (1995) found that Reading Recovery was able to accelerate the reading progress of 35% of the children who would not, under other programs, reach the level of their successful peers. Although there is some controversy about the cost effectiveness of Reading Recovery, the instruction given seems to be highly effective. Reading Recovery has been adapted to programs in group settings, and these programs seem to be effective in increasing children's reading achievement as well (e.g., Fountas & Pinnell, 1996; Hiebert, 1994; Taylor, Short, & Shearer, 1990).

Phonics in whole language classrooms. As we noted at the beginning of this article, whole language teachers do teach phonics. However, this instruction is often embedded in the context of teaching reading and is sensitive to the child's needs. Letter-sound instruction can occur as one of the cuing systems that children use to recognize words in reading (e.g., Weaver, 1994) and can also occur as part of writing instruction.

Whole language instruction varies considerably from teacher to teacher and from class to class (Watson, 1989). It may resemble the instruction in the Reading Recovery lessons described previously (although Reading Recovery is not a whole language approach; see Church, 1996). Some whole language teachers may provide less organized phonics instruction than occurs in Reading Recovery. An example of whole language phonics instruction comes from first-grade teacher Linda Headings's class:

> I focus on using children's names a lot, especially in the beginning months, because of the significance of names in their lives. Names carry power in giving us identity, and I can gather information by doing this, too. I can see who is unsure and who is not, who is trying to figure out not only his or her own name but also the names of others. Over the next month, I use names to do language play, poetry, games and songs, and to engage with environmental print. That name immersion will be pulled back out and used when children have questions about invented spelling. "It starts like Bobby," I'll say. "Go find his name tag and see what letter his name starts with." I can use this with children who are poor risktakers or developmentally lagging. It also gives them the avenue to monitor their own learning. I teach and guide, and the child acts on his [sic] own and completes the process by finding Bobby's name and writing the letter B. (Freppon & Headings, 1996, p. 71. Reprinted by permission of Christopher-Gordon Publishers.)

The instruction is embedded within the classroom framework, as names and name cards are used in a variety of classroom activities. Also, the name instruction is extended to other language activities, and the teacher strives to make the student an independent learner by not giving the child an answer, but instead providing the child a strategy for finding the answer (e.g., "It starts like Bobby").

In the accounts of phonics instruction from the projects of Dahl and Freppon (1995), Freppon and Dahl (1991), and Freppon and Headings (1996), who discuss observations of the same first-grade teacher, and from the work of Mills et al. (1992), we are given no examples of first-grade whole language teachers who teach something other than consonants. The lesson above is typical of what is presented in illustrative vignettes within these studies. Of course, just because lessons involving vowels or lessons involving the full examination of words were not present in vignettes does not mean that these teachers did not teach vowels. But it is still surprising that vowel lessons were not described, since one

would expect that instruction in vowels occurs during the first-grade year (Anderson, Hiebert, Scott, & Wilkinson, 1985).

The lack of phonics instruction beyond consonants may be indicative of whole language teachers' reticence to challenge their students. This may be symptomatic of a general lack of challenge in many whole language classes. One study found that children in whole language classrooms did not read as challenging materials as children in traditional classes and that the amount of challenge determined children's achievement at the end of the year (Stahl, Suttles, & Pagnucco, 1996). Church (1994, 1996), a whole language teacher in Nova Scotia, was also concerned that whole language teachers do not sufficiently challenge their students. In short, some reading programs based on the whole language philosophy may not encourage students to read more challenging texts and may not expose children to the types of phonics instruction they need to improve as readers and writers.

Research on contemporary approaches to phonics

Although there are indications that the contemporary approaches discussed in this section were effective, there is a notable lack of controlled research to validate the effectiveness of these approaches. Part of the reason for the lack of research is the newness of these approaches. Another possible reason is the general trend of the field away from comparative research and toward descriptive research (McKenna et al., 1994). Although descriptive research can give us insights, without some sort of comparison it is difficult to tell whether these new approaches are more effective than traditional approaches. Such comparative research need not be a horse race in which different approaches are saddled up to see which one produces the highest scores on a standardized achievement test. Instead, such comparisons may include qualitative aspects, such as in Dahl and Freppon's (1995) study, and should be directed toward what each approach might be effective at rather than toward choosing the most effective.

Constructions of knowledge about words

The principles discussed in the beginning of this article all relate to a teacher guiding students' constructions of knowledge about words. From a constructivist perspective, learners are thought to be actively constructing knowledge through their interactions with the world. This, of course, includes interactions with teachers and reading materials. Ordinarily, researchers have used a constructivist perspective to talk about comprehension, especially in conjunction with schema theory (e.g., Anderson & Pearson, 1984). Researchers in decoding rely on other psychological models, such as connectionism (Adams, 1990) and behaviorist models (Carnine, Silbert, & Kameenui, 1990). Neither of these models explicitly views the learner as actively constructing information about words.

Our observations of children show them very actively trying to make sense of words, in both their writing and their reading. A child who makes two or three attempts at a word in a text before coming up with one that makes sense and accommodates the letter-sound relationships that he or she knows is actively constructing word knowledge, as is the child who stretches out the letters in the word *camel* and produces *caml.*

Viewing decoding through a constructivist lens may be a whole language perspective (e.g., Weaver, 1994), but one need not adopt teaching techniques commonly associated with the whole language philosophy if one takes this perspective. A constructivist perspective is consistent with any of the methods discussed in the second section of this paper. Constructivism is not synonymous with discovery learning, since children can be guided in their constructions more or less explicitly. What constructivism implies is that the child is an active learner.

What children construct is a network of information about letters. They know, for example that *t* is more likely to be followed by *r* or *h* than by *q* or *p*, that *ck* never starts a word, that *q* is nearly always followed by *u* (with the exception of some Arabic and Chinese words) (see Adams, 1990; Venezky, 1970). Much of this information could be directly taught or learned from repeated experiences with print. Children do differ in their need for guidance. Some children will learn much of what they need to know about words from exposure (e.g., Durkin, 1966), but most children need some explicit support. This support might be provided in context, as in the embedded phonics instruction approaches, through analogy- or spelling-based approaches, or through more direct instruction. It could be that some children with reading problems require more direct instruction (Carnine et al., 1990).

The notion that children construct knowledge about words may explain why the differences among programs are small. As long as one provides early and systematic information about the code (Chall, 1996), it may not matter very much how one does it. If each of the programs discussed previously provides similar amounts of coverage with similar amounts of practice reading words in isolation and in context, they might all have similar effects. From a constructivist perspective, children learn by acting upon information; if the information is similar, the learning should be as well. The principles discussed in

the first part of this article suggest the information that should be taught in a phonics program. If this information is made available to children, then it may not matter exactly how the instruction occurs.

An effective first-grade reading program, for example, might involve some systematic and direct instruction in decoding, with associated practice in decodable texts (Juel & Roper/Schneider, 1985). These may include some contrived texts, if they are artfully and interestingly done. They also might include authentic literature chosen for repetition of taught patterns (Trachtenburg, 1990). Children also need a variety of engaging but easy texts, both for interest and for practice in reading a variety of materials. Some of these texts might be predictable where the context supports word recognition, at least until the child develops more independent word recognition strategies (Clay, 1993; Fountas & Pinnell, 1996). Predictable texts by themselves, however, may limit children's word learning (Duffy, McKenna, Vancil, Stratton, & Stahl, 1996), unless the teacher draws specific attention to words in those texts (Johnston, 1995). Writing, using invented spelling, is useful for developing word knowledge (Clarke, 1989). As they invent spellings, children need to integrate their developing phoneme awareness with their knowledge of sound-symbol correspondences (Stahl & Murray, 1998).

Because first-grade children are focused on decoding in their text reading (Chall, 1996), children's comprehension growth might best be accommodated by the teacher reading aloud to the children. Studies have found that children can learn new vocabulary words from hearing stories (e.g., Elley, 1989). In addition, teachers can model more advanced comprehension strategies with stories they read out loud to children since these stories are likely to have richer contexts than stories a child can read independently. This is not to say that comprehension should be ignored during children's reading. Basic strategies such as recall (Koskinen et al., 1988) or story grammars (Beck & McKeown, 1981) can be profitably taught to children at this age. An extensive reading program would likely improve first graders' motivation toward reading, as would a daily period of choice reading (Morrow & Tracey, 1998).

Thus, an effective first-grade program might involve elements associated with whole language (teacher reading aloud, invented spelling, free reading, extensive use of literature) as well as more direct instructional approaches (direct sound-symbol instruction, limited use of decodable or contrived texts). How these elements might be managed might also depend on the needs of the children. Children who enter first grade with a low literacy background may need more direct instruction to develop concepts that other children may have learned through print-based home experiences with literacy. Children with print-based literacy backgrounds may benefit from more time to choose their reading, with teacher support to read more and more complex materials.

Effective reading instruction requires that a teacher recognize multiple goals for reading instruction, and that different means are required to reach these multiple goals. Juggling these goals will always be a challenge. We are not sure, however, that the alleged balance we are seeing in some classroom reading programs is based on a forward-looking examination of what is needed for effective reading instruction; rather, it may be based, at least in part, on false allegations popularized by the media and accepted by some legislators and administrators describing the limited success of past reading programs.

The balance in some of today's reading programs appears to be an attempt to lay phonics instruction on top of a literature-based curriculum. This is easy. Good reading instruction, however, is difficult. It involves all teachers asking themselves what skills their students have, what their goals are, and how reading instruction can be directed toward all of their goals.

REFERENCES

ABT ASSOCIATES. (1977). *Education as experimentation: A planned variation model. Volume IV-B, Effects of follow-through models.* Cambridge, MA: Author.

ADAMS, G.L., & ENGLEMANN, S. (1996). *Research on direct instruction: 25 years beyond DISTAR.* Seattle, WA: Educational Achievement Systems.

ADAMS, M.J. (1990). *Beginning to read: Thinking and learning about print.* Cambridge, MA: MIT Press.

ANDERSON, R.C., HIEBERT, E.F., SCOTT, J.A., & WILKINSON, I.A.G. (1985). *Becoming a nation of readers.* Champaign, IL: National Academy of Education and Center for the Study of Reading.

ANDERSON, R.C., & PEARSON, P.D. (1984). A schema-theoretic view of basic processes in reading. In P.D. Pearson (Ed.), *Handbook of reading research* (pp. 255–292). White Plains, NY: Longman.

BARNES, G.W. (1989). Word sorting: The cultivation of rules for spelling in English. *Reading Psychology, 10,* 293–307.

BAUMANN, J.F., HOFFMAN, J.V., MOON, J., & DUFFY-HESTER, A.M. (1998). Where are teachers' voices in the phonics/whole language debate? Results from a survey of U.S. elementary classroom teachers. *The Reading Teacher, 51,* 636–650.

BEAR, D.R., & BARONE, D. (1989). Using children's spellings to group for word study and directed reading in the primary classroom. *Reading Psychology, 10,* 275–292.

BEAR, D.R., INVERNIZZI, M., TEMPLETON, S., & JOHNSTON, F. (1996). *Words their way: Word study for phonics, vocabulary, and spelling instruction.* Upper Saddle River, NJ: Merrill.

BECK, I.L., & MCKEOWN, M.G. (1981). Developing questions that promote comprehension: The story map. *Language Arts, 58,* 913–918.

BLOODGOOD, J. (1991). A new approach to spelling in language arts programs. *Elementary School Journal, 92,* 203–211.

BLOOMFIELD, L., & BARNHART, C.L. (1961). *Let's read: A linguistic approach.* Detroit, MI: Wayne State University Press.

BOND, G., & DYKSTRA, R. (1967). The cooperative research program in first grade reading. *Reading Research Quarterly, 2,* 5–142.

BRUCK, M., & TREIMAN, R. (1992). Learning to pronounce words: The limitations of analogies. *Reading Research Quarterly, 27*, 374–388.

BYRNE, B., & FIELDING-BARNSLEY, R. (1991). Evaluation of a program to teach phonemic awareness in young children. *Journal of Educational Psychology, 83*, 451–455.

CALFEE, R. (1998). Phonics and phonemes: Learning to decode in a literature-based program. In J. Metsala & L. Ehri (Eds.), *Word recognition in beginning literacy*. Mahwah, NJ: Erlbaum.

CALFEE, R. & HENRY, M. (1996). Strategy and skill in early reading acquistion. In J. Shimon (Ed.), *Literacy and education: Essays in memory of Dina Feitelson* (pp. 97–118). Cresskill, NJ: Hampton Press.

CALFEE, R.C., LINDAMOOD, P., & LINDAMOOD, C. (1973). Acoustic-phonetic skills and reading: Kindergarten through twelfth grade. *Journal of Educational Psychology, 64*, 293–298.

CALIFORNIA DEPARTMENT OF EDUCATION. (1995). *Every child a reader: The report of the California Reading Task Force*. Sacramento: Author. (http://www.cde.ca.gov/cilbranch/eltdiv/rdg_init.htm).

CARNINE, D., SILBERT, J., & KAMEENUI, E. (1990). *Direct instruction reading* (2nd ed.). Columbus, OH: Merrill.

CENTER, Y., WHELDALL, K., FREEMAN, L., OUTHRED, L., & MCNAUGHT, M. (1995). An evaluation of Reading Recovery. *Reading Research Quarterly, 30*, 240–263.

CHALL, J.S. (1989). Learning to read: The great debate twenty years later. A response to "Debunking the great phonics myth." *Phi Delta Kappan, 71*, 521–538.

CHALL, J.S. (1996). *Learning to read: The great debate* (revised, with a new foreword). New York: McGraw-Hill.

CHURCH, S.M. (1994). Is whole language really warm and fuzzy? *The Reading Teacher, 47*, 362–371.

CHURCH, S.M. (1996). *The future of whole language: Reconstruction or self-destruction*. Portsmouth, NH: Heinemann.

CLARKE, L.K. (1989). Encouraging invented spelling in first graders' writing: Effects on learning to spell and read. *Research in the Teaching of English, 22*, 281–309.

CLAY, M.M. (1991). Introducing a new storybook to young readers. *The Reading Teacher, 45*, 264–273.

CLAY, M.M. (1993). *Reading Recovery: A guidebook for teachers in training*. Portsmouth, NH: Heinemann.

CLYMER, T. (1963). The utility of phonic generalizations in the primary grades. *The Reading Teacher, 16*, 252–258.

CLYMER, T. (1996). The utility of phonic generalizations in the primary grades. *The Reading Teacher, 50*, 182–187.

COLLINS, J. (1997, October 27). How Johnny should read. *Time Magazine, 150*(17), 78–81.

CUNNINGHAM, P.M. (1975/1976). Investigating a synthesized theory of mediated word identification. *Reading Research Quarterly, 11*, 127–143.

CUNNINGHAM, P.M. (1978). Decoding polysyllabic words: An alternative strategy. *Journal of Reading, 21*, 608–614.

CUNNINGHAM, P.M. (1979). A compare/contrast theory of mediated word identification. *The Reading Teacher, 32*, 774–778.

CUNNINGHAM, P.M. (1980). Applying a compare/contrast process to identifying polysyllabic words. *Journal of Reading Behavior, 12*, 213–223.

CUNNINGHAM, P.M. (1995). *Phonics they use* (2nd ed.) . New York: HarperCollins.

CUNNINGHAM, P.M., & CUNNINGHAM, J.W. (1992). Making words: Enhancing the invented spelling-decoding connection. *The Reading Teacher, 46*, 106–115.

CUNNINGHAM, P.M., & HALL, D.P. (1994). *Making words*. Carthage, IL: Good Apple.

CUNNINGHAM, P.M., & HALL, D.P. (1997, May). *A framework for literacy in primary classrooms that work*. Paper presented at the 42nd annual convention of the International Reading Association, Atlanta, GA.

DAHL, K.L., & FREPPON, P.A. (1995). A comparison of innercity children's interpretations of reading and writing instruction in the early grades in skills-based and whole language classrooms. *Reading Research Quarterly, 30*, 50–74.

DEFORD, D.E. (1985). Validating the construct of theoretical orientation in reading instruction. *Reading Research Quarterly, 20*, 351–367.

DUFFY, A.M., MCKENNA, M., VANCIL, S., STRATTON, B., & STAHL, S.A. (1996, December). *Tales of Ms. Wishy-Washy: The effects of predictable books on learning to recognize words*. Paper presented at the annual meeting of the National Reading Conference, Charleston, SC.

DURKIN, D. (1966). *Children who read early*. New York: Teachers College Press.

DURKIN, D. (1978/1979). What classroom observations reveal about reading comprehension instruction. *Reading Research Quarterly, 14*, 481–533.

DURKIN, D. (1988). *A classroom observation study of reading instruction in kindergarten* (Tech. Rep. No. 422). Champaign, IL: Center for the Study of Reading, University of Illinois at Urbana-Champaign.

DYKSTRA, R. (1968). The effectiveness of code- and meaning-emphasis beginning reading programs. *The Reading Teacher, 22*, 17–23.

EHRI, L.C. (1992). Reconceptualizing the development of sight word reading and its relationship to recoding. In P. Gough, L.C. Ehri, & R. Treiman (Eds.), *Reading acquisition* (pp. 107–143). Mahwah, NJ: Erlbaum.

EHRI, L.C. (1995). Phases of development in learning to read words by sight. *Journal of Research in Reading, 18*, 116–125.

EHRI, L.C., & ROBBINS, C. (1992). Beginners need some decoding skill to read words by analogy. *Reading Research Quarterly, 27*, 12–26.

ELDREDGE, J.L. (1995). *Teaching decoding in holistic classrooms*. Englewood Cliffs, NJ: Merrill.

ELDREDGE, J.L., & BUTTERFIELD, D. (1986). Alternatives to traditional reading instruction. *The Reading Teacher, 48*, 32–37.

ELKONIN, D.B. (1973). U.S.S.R. In J. Downing (Ed.), *Comparative reading* (pp. 551–579). New York: Macmillan.

ELLEY, W.B. (1989). Vocabulary acquisition from listening to stories. *Reading Research Quarterly, 24*, 174–187.

ENGLEMANN, S., & BRUNER, E. (1969). *Distar reading program*. Chicago: SRA.

FAYNE, H.R., & BRYANT, N.D. (1981). Relative effects of various word synthesis strategies on the phonics achievement of learning disabled youngsters. *Journal of Educational Psychology, 73*, 616–623.

FEITELSON, D., KITA, R., & GOLDSTEIN, Z. (1986). Effects of listening to series stories on first graders' comprehension and the use of language. *Research in the Teaching of English, 20*, 339–356.

FLACK, M. (1931). *Angus and the cat*. Garden City, NY: Doubleday.

FLEISHER, L.S., JENKINS, J.R., & PANY, D. (1979/1980). Effects on poor readers' comprehension of training in rapid decoding. *Reading Research Quarterly, 15*, 30–48.

FOUNTAS, I.C., & PINNELL, G.S. (1996). *Guided reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.

FREPPON, P.A., & DAHL, K.L. (1991). Learning about phonics in a whole language classroom. *Language Arts, 68*, 190–197.

FREPPON, P.A., & HEADINGS, L. (1996). Keeping it whole in whole language: A first grade teacher's instruction in an urban whole language classroom. In E. McIntyre & M. Pressley (Eds.), *Balanced instruction: Strategies and skills in whole language* (pp. 65–82). Norwood, MA: Christopher-Gordon.

GAMBRELL, L.B., WILSON, R.M., & GANTT, W.N. (1981). Classroom observations of task-attending behaviors of good and poor readers. *Journal of Educational Research, 74*, 400–404.

GASKINS, I.W., DOWNER, M.A., ANDERSON, R.C., CUNNINGHAM, P.M., GASKINS, R.W., SCHOMMER, M., & THE TEACHERS OF THE BENCHMARK SCHOOL. (1988). A metacognitive approach to phonics: Using what you know to decode what you don't know. *Remedial and Special Education, 9*, 36–41.

GASKINS, I.W., EHRI, L.C., CRESS, C., O'HARA, C., & DONNELLY, K. (1996/1997). Procedures for word learning: Making discoveries about words. *The Reading Teacher, 50*, 312–327.

GASKINS, R.W., GASKINS, J.C., & GASKINS, I. (1991). A decoding program for poor readers—and the rest of the class, too! *Language Arts, 68*, 213–225.

GASKINS, R.W., GASKINS, J.C., & GASKINS, I. (1992). Using what you know to figure our what you don't know: An analogy approach to decoding. *Reading and Writing Quarterly: Overcoming Learning Disabilities, 8*, 197–221.

GILL, J.T. (1992). Development of word knowledge as it relates to reading, spelling, and instruction. *Language Arts, 69*, 444–453.

GILLET, J.W., & TEMPLE, C. (1990). *Understanding reading problems* (3rd ed.). Glenview, IL: Scott Foresman.

GILLINGHAM, A. (1956). *Remedial training for children with specific disability in reading, spelling, and penmanship.* Cambridge, MA: Educators Publishing Service.

GOODMAN, K.S. (1976). Reading: A psycholinguistic guessing game. In H. Singer & R.B. Ruddell (Eds.), *Theoretical models and processes of reading* (2nd ed., pp. 497–508). Newark, DE: International Reading Association.

GOODMAN, K.S. (1986). *What's whole in whole language? A parent/teacher guide to children's learning.* Portsmouth, NH: Heinemann.

GOODMAN, K.S. (1993). *Phonics phacts.* Portsmouth, NH: Heinemann.

GOODMAN, K.S., & GOODMAN, Y.M. (1977). Learning about psycholinguistic processes by analyzing oral reading. *Harvard Educational Review, 47*, 317–333.

GOSWAMI, U. (1993). Toward an interactive analogy model of reading development: Decoding vowel graphemes in beginning reading. *Journal of Experimental Child Psychology, 56*, 443–475.

GOSWAMI, U. (1998). The role of analogies in the development of word recognition. In J. Metsala & L. Ehri (Eds.), *Word recognition in beginning literacy.* Mahwah, NJ: Erlbaum.

GOUGH, P.B., & HILLINGER, M.L. (1980). Learning to read: An unnatural act. *Bulletin of the Orton Society, 30*, 179–196.

HALL, D.P., & CUNNINGHAM, P.M. (1996). Becoming literate in first and second grades: Six years of multimethod, multilevel instruction. In D.J. Leu, C.K. Kinzer, & K.A. Hinchman (Eds.), *Literacies for the 21st century.* 45th yearbook of the National Reading Conference (pp. 195–204). Chicago: National Reading Conference.

HARSTE, J.C., BURKE, C.L., & WOODWARD, V.A. (1982). Children's language and world: Initial encounters with print. In J.A. Langer & M.T. Smith-Burke (Eds.), *Reader meets author/Bridging the gap* (pp. 105–131). Newark, DE: International Reading Association.

HASKELL, D.W., FOORMAN, B.R., & SWANK, P.A. (1992). Effects of three orthographic/phonological units on first grade reading. *Remedial and Special Education, 13*, 40–49.

HAYNES, M.C., & JENKINS, J.R. (1986). Reading instruction in special education resource rooms. *American Educational Research Journal, 23*, 161–190.

HERMAN, P.A. (1985). The effect of repeated readings on reading rate, speech pauses, and word recognition accuracy. *Reading Research Quarterly, 20*, 553–565.

HIEBERT, E.H. (1994). A small group literacy intervention with Chapter I students. In E.H. Hiebert & B.M. Taylor (Eds.), *Getting reading right from the start* (pp. 85–106). Boston: Allyn & Bacon.

HOFFMAN, J.V., MCCARTHEY, S.J., ABBOTT, J., CHRISTIAN, C., CORMAN, L., CURRY, C., DRESSMAN, M., ELLIOTT, B., MATHERNE, D., & STAHLE, D. (1994). So what's new in the new basals? A focus on first grade. *Journal of Reading Behavior, 26*, 47–73.

HOHN, W.E., & EHRI, L.C. (1983). Do alphabet letters help prereaders acquire phonemic segmentation skill? *Journal of Educational Psychology, 75*, 752–762.

INVERNIZZI, M., ABOUZEID, M., & GILL, T. (1994). Using students' invented spellings as a guide for spelling instruction that emphasizes word study. *Elementary School Journal, 95*, 155–167.

INVERNIZZI, M., JUEL, C., & ROSEMARY, C.A. (1996/1997). A community volunteer tutorial that works. *The Reading Teacher, 50*, 304–311.

IVERSEN, S., & TUNMER, W.E. (1993). Phonological processing skills and the Reading Recovery program. *Journal of Educational Psychology, 85*, 112–126.

JOHNSTON, F.R. (1995, December). *Learning to read with predictable text: What kinds of words do beginning readers remember?* Paper presented at the annual meeting of the National Reading Conference, New Orleans, LA.

JOHNSTON, F., JUEL, C., & INVERNIZZI, M. (1995). *Guidelines for volunteer tutors of emergent and early readers.* Charlottesville, VA: University of Virginia McGuffey Reading Center.

JUEL, C., & ROPER/SCHNEIDER, D. (1985). The influence of basal readers on first grade reading. *Reading Research Quarterly, 20*, 134–152.

KAMEENUI, E.J., SIMMONS, D.C., CHARD, D., & DICKSON, S. (1997). Direct instruction reading. In S.A. Stahl & D.A. Hayes (Eds.), *Instructional models in reading* (pp. 59–84). Mahwah, NJ: Erlbaum.

KEAN, M.H., SUMMERS, A.A., RAIVETZ, M.J., & FARBER, I.J. (1979). *What works in reading? Summary and results of a joint school district/Federal Reserve Bank empirical study in Philadelphia.* Philadelphia: Office of Research and Evaluation. (ERIC Document Reproduction Service ED 176 216)

KLINE, C.L., & KLINE, C.L. (1975). Follow-up study of 216 dyslexic children. *Bulletin of the Orton Society, 25*, 127–144.

KOSKINEN, P.S., GAMBRELL, L.B., KAPINUS, B.A., & HEATHINGTON, B.S. (1988). Retelling: A strategy for enhancing students' reading comprehension. *The Reading Teacher, 41*, 892–896.

LEINHARDT, G., ZIGMOND, N., & COOLEY, W. (1981). Reading instruction and its effects. *American Educational Research Journal, 18*, 343–361.

LEVINE, A. (1994, December). Education: The great debate revisited. *Atlantic Monthly, 274*(6), 38–44.

LOVITT, T.C., & DEMIER, D.M. (1984). An evaluation of the Slingerland method with LD youngsters. *Journal of Learning Disabilities, 17*, 267–272.

LOVITT, T.C., & HURLBURT, M. (1974). Using behavior-analysis techniques to assess the relationship between phonics instruction and oral reading. *Journal of Special Education, 8*, 57–72.

MCINTYRE, E., & PRESSLEY, M. (1996). *Balanced instruction: Strategies and skills in whole language.* Norwood, MA: Christopher-Gordon.

MCKENNA, M.C., STAHL, S.A., & REINKING, D. (1994). A critical commentary on research, politics, and whole language. *Journal of Reading Behavior, 26*, 211–233.

MEYER, L.A. (1983). Increased student achievement in reading: One district's strategies. *Research in Rural Education, 1*, 47–51.

MILLS, H., O'KEEFE, T., & STEPHENS, D. (1992). *Looking closely: Exploring the role of phonics in one whole language classroom.* Urbana, IL: National Council of Teachers of English.

MONROE, M. (1932). *Children who cannot read.* Chicago: University of Chicago Press.

MOORMAN, G.B., BLANTON, W.E., & MCLAUGHLIN, T. (1994).

The rhetoric of whole language. *Reading Research Quarterly, 29*, 308–329.

MORRIS, D. (1992). *Case studies in teaching beginning readers: The Howard Street tutoring manual.* Boone, NC: Fieldstream Publications.

MORRIS, D., ERVIN, C., & CONRAD, K. (1996). A case study of middle school reading disability. *The Reading Teacher, 49*, 368–377.

MORROW, L.M., & TRACEY, D. (1998). Motivating contexts for young children's literacy development: Implications for word recognition development. In J. Metsala & L. Ehri (Eds.), *Word recognition in beginning literacy.* Mahwah, NJ: Erlbaum.

MURRAY, B.A. (1995). *Which better defines phoneme awareness: Segmentation skill or identity knowledge?* Unpublished doctoral dissertation, University of Georgia, Athens.

MURRAY, B.A., STAHL, S.A., & IVEY, M.G. (1996). Developing phoneme awareness through alphabet books. *Reading and Writing: An Interdisciplinary Journal, 8*, 307–322.

OGDEN, S., HINDMAN, S., & TURNER, S.D. (1989). Multisensory programs in the public schools: A brighter future for LD children. *Annals of Dyslexia, 39*, 247–267.

OSBORN, J. (1984). The purposes, uses, and contents of workbooks and some guidelines for publishers. In R.C. Anderson, J. Osborn, & R.J. Tierney (Eds.), *Learning to read in American schools: Basal readers and content texts* (pp. 45–112). Hillsdale, NJ: Erlbaum.

OSBORN, J., STAHL, S.A., & STEIN, M. (1997). *Teachers' guidelines for evaluating commercial phonics packages.* Newark, DE: International Reading Association.

PEARSON, P.D. (1989). Reading the whole language movement. *Elementary School Journal, 90*, 231–241.

PRESSLEY, M., RANKIN, J., & YAKOI, L. (1996). A survey of instructional practices of primary teachers nominated as effective in promoting literacy. *Elementary School Journal, 96*, 363–384.

RASINSKI, T.V. (1991). Fluency for everyone: Incorporating fluency instruction in the classroom. *The Reading Teacher, 43*, 690–692.

ROUTMAN, R. (1996). *Literacy at the crossroads.* Portsmouth, NH: Heinemann.

SAMUELS, S.J., SCHERMER, N., & REINKING, D. (1992). Reading fluency: Techniques for making decoding automatic. In S.J. Samuels & A.E. Farstrup (Eds.), *What research says about reading instruction* (2nd ed., pp. 124–144). Newark, DE: International Reading Association.

SCHLAGAL, R.C., & SCHLAGAL, J.H. (1992). The integral character of spelling: Teaching strategies for multiple purposes. *Language Arts, 69*, 418–424.

SEUSS, DR. (1957). *The cat in the hat.* Boston: Houghton Mifflin.

SHANAHAN, T., & BARR, R. (1995). Reading Recovery: An independent evaluation of the effects of an early instructional intervention for at-risk learners. *Reading Research Quarterly, 30*, 958–996.

SHARE, D.L. (1995). Phonological recoding and self-teaching: Sine qua non of reading acquisition. *Cognition, 55*, 151–218.

SILBERBERG, N.E., IVERSEN, I.A., & GOINS, J.T. (1973). Which remedial reading method works best? *Journal of Learning Disabilities, 6*, 547–556.

SPAULDING, R., & SPAULDING, W.T. (1962). *The writing road to reading.* New York: Morrow.

STAHL, K.A.D., STAHL, S.A., & MCKENNA, M. (1997). *The development of phonological awareness and orthographic processing in Reading Recovery.* Unpublished manuscript, University of Georgia, Athens.

STAHL, S.A. (1997). Models of reading instruction: An introduction. In S.A. Stahl & D.A. Hayes (Eds.), *Instructional models in reading* (pp. 1–29). Hillsdale, NJ: Erlbaum.

STAHL, S.A., HEUBACH, K., & CRAMOND, B. (1997). *Fluency oriented reading instruction* (Research Report). Athens, GA: National Reading Research Center.

STAHL, S.A., & MURRAY, B.A. (1994). Defining phonological awareness and its relationship to early reading. *Journal of Educational Psychology, 86*, 221–234.

STAHL, S.A., & MURRAY, B.A. (1998). Issues involved in defining phonological awareness and its relation to early reading. In J. Metsala & L.C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 65–87). Mahwah, NJ: Erlbaum.

STAHL, S.A., OSBORN, J., & PEARSON, P.D. (1994). *Six teachers in their classrooms: Looking closely at beginning reading* (Tech. Rep. No. 606). Champaign, IL: Center for the Study of Reading, University of Illinois at Urbana-Champaign.

STAHL, S.A., SUTTLES, C.W., & PAGNUCCO, J.R. (1996). The effects of traditional and process literacy instruction on first graders' reading and writing achievement and orientation toward reading. *Journal of Educational Research, 89*, 131–144.

STANOVICH, K.E. (1991). The psychology of reading: Evolutionary and revolutionary developments. *Annual Review of Applied Linguistics, 12*, 3–30.

SULLIVAN, H.J., OKADA, M., & NIEDERMEYER, F.C. (1971). Learning and transfer under two methods of word-attack instruction. *American Educational Research Journal, 8*, 227–240.

TANGEL, D.M., & BLACHMAN, B.A. (1992). Effect of phoneme awareness instruction on kindergarten children's invented spellings. *Journal of Reading Behavior, 24*, 233–262.

TAYLOR, B.M., SHORT, R., & SHEARER, B. (1990, December). *Early intervention in reading: Prevention of reading failure by first grade classroom teachers.* Paper presented at the annual meeting of the National Reading Conference, Miami, FL.

TEMPLETON, S. (1989). Tacit and explicit knowledge of derivational morphology: Foundations for a unified approach to spelling and vocabulary development in the intermediate grades and beyond. *Reading Psychology, 10*, 233–253.

TEMPLETON, S. (1991). Teaching and learning the English spelling system: Reconceptualizing method and purpose. *Elementary School Journal, 92*, 185–201.

TEMPLETON, S. (1992). New trends in an historical perspective: Old story, new resolution—Sound and meaning in spelling. *Language Arts, 69*, 454–463.

TEMPLETON, S., & BEAR, D.R. (Eds.). (1992). *Development of orthographic knowledge and the foundations of literacy: A memorial Festschrift for Edmund H. Henderson.* Hillsdale, NJ: Erlbaum.

TRACHTENBURG, P. (1990). Using children's literature to enhance phonics instruction. *The Reading Teacher, 43*, 648–653.

TRAUB, N. (1977). *Recipe for reading* (2nd ed.). New York: Walker.

TURNER, J.C. (1995). The influence of classroom contexts on young children's motivation for literacy. *Reading Research Quarterly, 30*, 410–441.

VENEZKY, R.L. (1970). *The structure of English orthography.* The Hague, The Netherlands: Mouton.

VICKERY, K.S., REYNOLDS, V.A., & COCHRAN, S.W. (1987). Multisensory training approach for reading, spelling and handwriting: Orton-Gillingham based curriculum in a public school setting. *Annals of Dyslexia, 37*, 189–200.

WASIK, B.A., & SLAVIN, R.E. (1993). Preventing early reading failure with one-to-one tutoring: A review of five programs. *Reading Research Quarterly, 28*, 178–200.

WATSON, D.J. (1989). Defining and describing whole language. *Elementary School Journal, 90*, 129–142.

WEAVER, C. (1994). *Reading process and practice: From socio-psycholinguistics to whole language.* Portsmouth, NH: Heinemann.

WHITE, T.G., & CUNNINGHAM, P.M. (1990, April). *Teaching disadvantaged students to decode and spell by analogy.* Paper presented at the annual meeting of the American Educational Research Association, Boston.

YADEN, D.B., SMOLKIN, L.B., & MACGILLIVRAY, L. (1993). A psychogenetic perspective on children's understanding about letter associations during alphabet book readings. *Journal of Reading Behavior, 25*, 43–68.

ZUTELL, J., & RASINSKI, T. (1989). Reading and spelling connections in third and fifth grade students. *Reading Psychology, 10*, 137–155.

Received October 30, 1997
Final revision received December 22, 1997
Accepted January 12, 1998