THE NATIONAL READING PANEL REPORT:

Practical Advice for Teachers

Timothy Shanahan
University of Illinois at Chicago

LEARNING POINT
Associates™

North Central Regional
Educational Laboratory

LEARNING POINT
Associates™

Contents

The National Reading Panel Report

Context: It is the 1990s and dark shadows lie across the land of reading education. *Time* and other news magazines begin referring to "reading wars," war being an apt metaphor for the bitter debates over how to teach reading that were raging in the nation. On one side are those who view the hallmark of sound literacy education as a sufficiently supportive environment: If classrooms provided books that were compelling, if classroom routines were not so routine, if it could be possible for children to love reading enough, then reading would happen. On the other side are those more focused on explicit teaching: If we could provide all children with the skills needed, if we could teach reading well enough, if we could teach reading early enough, then all children would be able to read.

Response: When this war of words between whole-language and basic-skills philosophies became so intense that it disrupted schooling and threatened to undermine confidence in public education, something unprecedented took place. For the first time in history, the federal government, under President Bill Clinton and the U.S. Congress, required that a group of scientists, teachers, administrators, and teacher educators determine what research had to say about reading. This panel, the National Reading Panel, was not to put forth opinions or even strive for consensus— but was to understand the actual research findings so schools could proceed to do what was best for children.

Since it first appeared, the National Reading Panel Report (National Institute of Child Health and Human Development [NICHD], 2000) has been translated into various summary documents, educational policies, and designs for curriculum materials. Even so, the report is still not accessible to many teachers and principals, and the various summaries have been criticized for their inadequacy and inaccuracy (Allington, 2002; Shanahan, 2003, 2004). The report itself is more than 500 pages and was written by a committee of scientists; the multiple authorship resulted in some inconsistency of style, voice, and accessibility of the writing. The purpose of this monograph is to try to summarize, explain, and provide advice for teachers about how to use the findings of the National Reading Panel Report. But, first, some preliminaries:

Should We Even Care What the Report Says?

Of course, there are many books on reading education and thousands of vendors, consultants, professors, and other experts on the subject. There are even a large number of authoritative reports written with the idea of shaping reading education. There are so many alternative sources of information, why should anyone listen to the National Reading Panel? What gives this report any special legitimacy?

First, the panel was composed of a group of 14 outstanding scholars who had been selected by NICHD Director Duane Alexander and Secretary of Education Richard Riley from a list of 300 nominees offered by educational organizations and agencies such as the International Reading Association and the National Reading Conference.

Second, the panelists were prohibited from having financial ties to commercial publishers; they were required to provide financial disclosure statements and sign affidavits attesting to their independence from financial conflicts of interest. Someone who might have profited from the work may have been able to do it without bias, but teachers and parents should not have to worry about the role of financial influence in such decisions, and with the National Reading Panel that is not a concern.

Third, the panel proceeded based on input from five public hearings at which more than 400 teachers and others gave testimony. All panel meetings were open to the public and its deliberations and discussions took place in plain sight—each meeting was even audiotaped and transcribed. No other findings on reading education have ever been so publicly determined.

Fourth, the panel did not offer opinions about research findings, nor were the members of the panel allowed to arbitrarily select or omit any studies. Instead, the panel had to establish research and synthesis procedures first and then follow them consistently. Prior to beginning the synthesis of research, the panel issued extensive plans for how to identify questions, search the research literature, select studies, and combine the studies into findings. These procedures were made public early in the process. This means the panel could not begin with predetermined results; that is, simply selecting studies that fit a previously chosen set of conclusions.

Fifth, the panel drew evidence only from the types of research that permit a high degree of certainty in determining what instructional actions cause higher achievement. Because the goal was to identify instructional practices that confer a learning benefit, it was deemed essential the studies be ones in which instructional practices were tested by teachers in classrooms under conditions that allowed the learning benefits— or lack of benefits— to be measured. Although other kinds of research are valuable, they cannot provide direct answers to the panel's questions, and so such research was not used.

Sixth, the panel only drew conclusions when there was a high degree of certainty the findings were correct. Due to small sample sizes and design differences, research studies can produce results that seem to be in conflict. All major determinations made by the National Reading Panel were made based on a synthesis of a large number of studies. Results that are repeated across many independent investigations are the most trustworthy, and the panel limited its use of research to often-replicated findings.

Why Research?

Teachers, principals, and parents are working hard to improve their children's reading achievement; most are doing everything they know to help children succeed in learning to read and write. Nevertheless, estimates of national reading achievement reveal the insufficiency of current efforts. According to the National Assessment of Educational Progress (Grigg, Daane, Jin, & Campbell, 2003), far too many American children cannot read well enough to do their schoolwork, and it is doubtful they will eventually receive the full economic, social, and civic benefits of society.

Many sources of information can be used as the starting point for school improvement. For example, teachers can draw on their own experiences of what works, and they can share these experiences among themselves. Unfortunately, relying on experience alone in this way has not led to wide gains in reading achievement. One reason for this is that any person has a limited amount of experience. A teacher might recognize that a current instructional approach works better than some earlier practices, but he or she could not know whether the students could perform better with another approach. Research studies help to resolve this kind of problem better than practitioners can on their own.

Unfortunately, teachers rarely have easy access to the research literature and when they do, they may have found the research through someone with the wrong reasons or a very limited awareness and understanding of all the research on an issue. That is a situation in which the National Reading Panel Report is useful. It is intended to provide an unbiased and careful review of the research findings on various issues and topics, so schools was be able to depend on trustworthy and accurate information on how to improve reading achievement.

How the Panel Worked

The National Reading Panel began deliberations in April 1998 and issued a report two years later. Originally, Congress asked the panel to complete its work in less than a year, but acceded to the panel's request for an additional year of study.

The panel met often during those two years, and many decisions were made at those meetings. The most difficult choices were about which questions about reading instruction would be answered. At the time, panelists searched for the terms *reading*, *writing*, and *literacy* in the Education Resources Information Center (ERIC) database and found more than 100,000 documents. Though these would not all be research articles, the large number of documents made it imperative that the panel be selective in identifying topics to explore.

Fortunately, the first meeting of the panel coincided with the publication of *Preventing Reading Difficulties in Young Children*, a report issued by the National Research Council (Snow, Burns, & Griffin, 1998). This report was developed through a consensus-building process—not a formal synthesis of research—among an outstanding, yet diverse, group of

scholars. It provided an excellent starting point for the panel, as it included valuable insights into how the scholarly community was beginning to view effective reading instruction.

The panel conducted five public hearings and these led to many recommendations for additional topics. Finally, panelists—who also were noted experts in the field—offered their own views. A total of approximately 30 topics were considered (Shanahan, 2003). In order to shorten such a long list of topics, the panel took a series of votes, and eventually chose eight topics to explore: phonemic awareness, phonics, oral reading fluency, encouraging children to read, vocabulary, comprehension strategies, professional development, and technology.

On two topics—technology and encouraging children to read—there were not enough studies from which to draw conclusions. More research is needed to decide whether technology can be used effectively to improve reading and how best to encourage children to read in ways that will improve their reading ability.

Results were provided by the panel for each of the other six topics. Five of these topics were about issues of how teachers should teach reading, and one was about teacher preparation for reading instruction. This mono-graph will explain the findings only on the five reading instruction topics, but it should be noted that the panel concluded that the professional development of teachers had a significant positive impact on children's learning.

The National Reading Panel examined research studies that focused on children in Grades K–12. This means that although the federal government has emphasized the relevance of the findings in the primary grades, these findings are applicable to older students too.

When the panel issued its report, the chapters were presented in the following order: phonemic awareness, phonics, oral reading fluency, vocabulary, and comprehension. Some observers interpreted that to imply a sequence of instruction, which is not the case. In fact, the National Reading Panel did not provide, either explicitly or implicitly, any information about the order or organization of instruction. The research showed the value of each of these components but not of specific instructional programs. Usually, the components were studied within the context of typical instruction. For example, a study would examine the impact of vocabulary by giving one of two groups some kind of enhanced vocabulary teaching. In such studies, other additional reading instruction would be the same for both groups.

The National Reading Panel did not study every aspect of an issue. Many worthwhile topics were not addressed. The panel did not examine preschool reading instruction or the best ways to teach English language learners. It did not analyze writing instruction or the effectiveness of particular commercial programs. If the panel had examined some of these issues, it is possible there would have been sufficient evidence on which to sustain additional findings. In other cases, it is likely the panel would have concluded that there was not enough evidence to amend the findings. Regardless, the fact that any particular approach was not reviewed by the National Reading Panel should not cause any

assumption about whether the approach works; such determinations can only be made based on a review of the relevant studies.

An example of an important issue that was not pursued in the report is whether racial differences modify the effectiveness of instructional interventions. Are any instructional approaches especially useful for teaching African-American children or children from other minority groups? This is important to understand because African-American children tend to read at levels below national averages (Grigg et al., 2003). Unfortunately, although the original studies often included a diversity of children, they rarely reported their data in a way that would allow any differences in effectiveness to be discovered. Barring the discovery of proof that these approaches work better with some children than others, it is most prudent to assume them to be beneficial for all because few studies have ever been able to identify such treatment variations in education (Cronbach & Snow, 1977). Future research studies will be needed in order to decide whether some adjustments should be made for various groups of students.

What Has Happened Since the National Reading Panel?

The National Reading Panel Report continues to be the cornerstone of the federal literacy policy. It was completed during the presidency of Bill Clinton, and became the basis of educational law during the presidency of George W. Bush. This position was overwhelmingly affirmed by the same U.S. Congress that approved the Reading First program, which provides money to low-achieving schools to improve reading instruction for primary-grade children. States are encouraging school districts, even those ineligible for Reading First funding, to upgrade their reading programs to reflect the National Reading Panel findings. Many publishers, likewise, are altering their books and materials to ensure they reflect these research findings. Due to the strong emphasis on trying to improve instruction through the application of research, it is important that teachers understand the findings and how to deliver the instruction that benefits children.

Of course, as has been noted, the National Reading Panel left many questions unanswered. Consequently, the federal government has followed up with the appointment of additional research review panels. Currently, two such panels are conducting reviews of preschool literacy (the National Early Literacy Panel) and second language literacy (the National Panel on Language Minority Children and Youth). In future years, the findings of the National Reading Panel will be adjusted and extended based upon the work of these and other panels that will follow it.

Phonemic Awareness

Some Definitions and Distinctions

Phonemic awareness is the ability to hear and manipulate the individual sounds within words. (The sounds within words are called *phonemes*, so awareness of these sounds is phonemic awareness.) Spoken words are composed of sounds. For instance, the word *cat* has three sounds or phonemes: /c/ /a/ /t/ (conventional linguistic notation separates individual sounds or phonemes with slash marks). The word *bike* also has three phonemes: /b/ /I/ /k/; phonemic awareness is of awareness of sounds, not letters. The word *bike* has four letters, but we hear only three phonemes when the word is spoken. For most adults, dividing words like *cat* or *bike* into constituent sounds is easy, but for young children the task can be formidable: Words seem to "explode out" as one big sound—*cat*—rather than as collections of smaller sounds.

Young children vary greatly in the ability to hear the individual sounds within words, and this variation led some scientists to hypothesize that phonemic awareness might be an essential early reading skill (Stanovich, 1986). The question was whether children with a well-developed ability to hear the sounds within words would be better equipped to learn how these sounds match the letters. English is an "alphabetic language," meaning that the letters in the written language refer to or correspond to the sounds in the spoken language. A child who cannot perceive the separable sounds within words is at a disadvantage when it is time to match these sounds with letters while learning to read.

Phonemic awareness is not the same as phonics. *Phonics* refers to instruction in how letters and sounds correspond to each other and how these sound-letter correspondences can be used to decode or pronounce words in text. *Decoding* means the analysis of the letters in a word to determine its pronunciation; to translate from one form of message to another, such as from printed text to pronunciation. Phonemic awareness is not about how sounds and letters match or how to sound out letters to form words; it is only about hearing and thinking about or manipulating the individual sounds within words.

Many parents and teachers know about the teaching of phonics, but phonemic awareness instruction is a newer idea. Without phonemic awareness, phonics is harder to learn. In other words, phonemic awareness is something that should be taught before phonics—or at least early in the phonics sequence—so children receive maximum benefit from their phonics instruction. Some phonics programs include phonemic awareness instruction and some do not, so it is important to understand the distinction.

It also is useful to distinguish phonemic awareness from another related term, *phonological awareness*. Phonological awareness is actually a broader concept, and phonemic awareness is part of this larger idea. *Phonological awareness* refers to the sensitivity to the phonological or sound structure of words. It includes phonemic awareness, but also encompasses many earlier developing skills such as the awareness of syllables or rhyme.

Awareness of syllables within words is an important aspect of phonological awareness. A child who has mastered this aspect of phonology will be able to perform tasks such as dividing the pronunciation of names into syllables: *Bob–by; Tom–my; Gwen–do–lyn; Shei–la; Ma–ri–o*; or to blend these syllables back into proper pronunciations of the names. Rhyming ability is another aspect of phonological awareness, and it includes the ability to recognize that words rhyme, to identify which words rhyme, and to provide rhymes.

Developmental Sequence

Scientists have not yet arrived at a clear description of the sequence of how phonological awareness—including phonemic awareness—develops in young children (Torgesen & Mathes, 2000), though some things are known about this development. For example, it is evident that these phonological skills are part of normal oral language development and that these skills would unfold to a great extent for most children even in the context of nonalphabetic languages such as Chinese (Hu & Catts, 1998) or even if written language and reading had never developed in human history.

It also is clear that the more global aspects of phonological awareness, such as syllable awareness, appear earlier in childhood than the more demanding skills of phonemic awareness (Lonigan, Burgess, Anthony, & Barker, 1998). This means that kindergartners may profit from some early attention—prior to the teaching of phonemic awareness—to rhyming and syllable awareness if these abilities are not yet in place.

Another fact about development that is important to know is that very few 3- and 4-year-olds have much phonemic awareness, but most—though not all—8-year-olds do (Bryant, MacLean, Bradley, & Crossland, 1990). This means this aspect of language develops during the same years when children are trying to learn to read. The importance of phonemic awareness in reading has been shown in studies that have revealed the close connection between phonemic awareness and reading achievement (Torgesen & Mathes, 2000): Young children with well-developed phonemic awareness skills tend to be successful readers, while children without these skills usually are not.

This raises the question, can phonemic awareness be taught? Can instruction accelerate the pace of this part of language development so that children can learn to read more easily? That, in fact, was the question the National Reading Panel attempted to answer.

Does Phonemic Awareness Instruction Improve Reading?

The National Reading Panel examined 52 studies on the teaching of phonemic awareness in which researchers taught children to hear the separate sounds within words (NICHD, 2000). These studies clearly showed that phonemic awareness instruction could improve children's phonemic awareness. Moreover, phonemic awareness teaching was advantageous to children in the early stages of learning to read; such instruction led to higher achievement in early reading and spelling, and the impacts on reading were evident when measuring both word recognition and reading comprehension.

The 52 studies examined by the panel considered the impact of phonemic awareness instruction on three types of learners: young children who were at risk of failure, young children who were progressing normally, and children who were older and learning-disabled. Instruction led to higher phonemic awareness for all three groups, but the younger children benefited most. It appears that phonemic awareness is best taught in kindergarten and first grade. Although both normally progressing and at-risk children learned phonemic awareness from this teaching, the improvement was greater in the reading skills of the at-risk children.

How Much Phonemic Awareness Instruction Do Children Need?

Phonemic awareness studies examined by the panel included instruction as brief as one hour and as extensive as 75 hours. The optimum amount of instruction across these studies—that is, the amount of instruction that was associated with the greatest reading gains—was between five and 18 hours. Nevertheless, the panel was careful not to conclude that a specific amount of phonemic awareness instruction is best, and it recognized that the amount should be based on individual need.

From these data, it would seem wise to ensure that 14–18 hours of phonemic awareness teaching be provided to young children (approximately 15 minutes per day for a semester of kindergarten). However, some children will not require this much instruction, and some may need more. Consequently, it is important to be diagnostic, adjusting the amount of teaching to meet the needs of the individual child.

What Kinds of Phonemic Awareness Instruction Are Best?

Studies of phonemic awareness worked with children who were organized in several different configurations: individual tutoring, small-group, and large-group instruction. Because many of the studies of older,

struggling readers—the group that benefited least from this teaching—provided the instruction through tutoring, it is difficult to accurately estimate the effects of one-on-one teaching of phonemic awareness.

In the studies of younger children, phonemic awareness teaching was delivered to whole classes or small groups, and the effectiveness of these variables can be compared. Small-group teaching led to greater learning than was evident with large-group teaching. This is not surprising as small-group instruction allows the teacher to receive more of the children's attention, children can better see the teacher's mouth as the words are being spoken—an important perceptual cue to phonemic awareness (Massaro, 1997), and the children have more opportunities to respond to and receive feedback from the teacher in the small-group setting.

Small groups, although more effective, require more teaching time. Even if a teacher had only 15 children in a class, groups of three would require five times the amount of instruction that a whole-class lesson would. For this reason, phonemic awareness should be taught using a combination of whole-class and small-group teaching. Lessons might be taught first to the whole class, with more intensive small-group follow-up for those who fail to progress adequately from the whole-class instruction alone. This approach reflects the research findings and balances the efficiencies of whole-class teaching with the learning needs of individual children.

The studies showed that simple instruction was better than complex instruction. Again, this should not be surprising, since the test subjects were kindergarten and first-grade children. Instructional efforts that focused on one or two phonemic awareness skills had greater impacts on learning than those that addressed several skills simultaneously. Table 1 (see Appendix A, p. 40) shows some of the skills that might be taught in a phonemic awareness program.

More Advice for Teachers on Teaching Phonemic Awareness

The phonemic awareness skills found to give the greatest reading advantage to kindergarten and first-grade children are *segmenting* and *blending*. Instruction in phonemic awareness should continue until students can fully segment words (divide single syllable words into all constituent sounds) with ease. At that point, students are ready to receive the most benefit from reading instruction. Usually children find segmentation and blending (pronouncing the sounds together so that they form a word) to be the hardest and latest developing of the phonemic awareness skills. Teachers need to be sure that children are learning to hear the sounds in words well enough to support full segmentation as well as learning the blending skills to put words back together again. Once children have accomplished these goals, there is little need for additional phonemic awareness instruction.

The sounds at the beginnings of words are usually easier for children to perceive than those at the ends of words, and those in the middle are even more difficult (Torgesen & Mathes, 2000). It is important that the classroom be a quiet place when working on phonemic awareness so the children can hear the sounds clearly. They also should be seated in a way that allows them to see the teacher's mouth as words are pronounced. It is helpful, at least at first, to stretch or exaggerate sounds so the children can hear them better (Murray, 1998). "Listen to the first sound: /k/ /k/ /k/ *cane*." Stretching the vowels—and also having the children stretch them—can be a great way to highlight a particular part of a word. Don't say "*bad*," say "*b aaaaaaaaaaa d*." After some time, children should need less of a cue to hear the medial /a/ as a separate sound.

Focusing only on hearing the sounds can be too abstract for young children. The use of physical representations of sounds can help them understand this concept. For example, many teachers use objects or counters the children can move as they hear each sound. The studies reviewed by the National Reading Panel found that when letter cards were used as counters—giving children a type of combined phonemic awareness and phonics activity—the children progressed fastest. The panel concluded that the best learning results were obtained when letter instruction was combined with phonemic awareness instruction.

Phonemic awareness instruction should be motivational as well. This instruction should seem like play, and songs and games can easily be part of the phonemic awareness routines in the classroom (Adams, Foorman, Lundberg, & Beeler, 1997). Having children clap when the words have the same sound or jump when they do not are methods of adding some joy to the proceedings; using the children's own names for the exercises can help maintain interest too.

Phonemic Awareness Summary

Beginning readers benefit from instruction that teaches them to hear the sounds within words (phonemic awareness). This instruction prepares them for making the link between letters and sounds and should be kept simple, brief, and enjoyable. Phonemic awareness is taught through language songs and games and other activities that encourage students to listen for the sounds within words. Students will have successfully accomplished learning phonemic awareness when they can fully segment words with ease; for most children, this can be accomplished during kindergarten or first grade.

Phonics

Some Definitions and Distinctions

Phonics instruction teaches students to use the relationship between letters and sounds to translate printed text into pronunciation (for some important distinctions among common terms, see Table 3 in Appendix A, p. 41). It includes the teaching of letter sounds, how complex spelling patterns are pronounced, and how to use this information to decode or sound out words. Throughout most of the history of American schooling, phonics was widely seen as a unique method of teaching—like basal readers or computerized instruction. However, it should be thought of more properly as part of the content of reading instruction. No matter what instructional approach is taken to learning to read, the ability to use phonics should be one of the outcomes.

The National Reading Panel examined the impact of systematic phonics instruction. *Systematic phonics* is the teaching of phonics with a clear plan or program, as opposed to more opportunistic or sporadic attention to phonics in which the teacher must construct lessons in response to the observed needs of children. During the years leading up to the National Reading Panel Report, some reading authorities claimed phonics should be taught through minilessons based on individual student learning needs (Moustafa, 1997). The way this was intended to work was that teachers would note that some children needed help with a particular sound-symbol relationship or spelling pattern and would then provide appropriate "just in time" lessons; only giving the children what they needed at the time they needed it. The authorities claimed that this kind of responsive teaching would be more effective than a well-planned daily sequence of phonics instruction. The National Reading Panel examined the value of phonics instruction and the effectiveness of the different approaches in meeting the learning needs of children.

Another important distinction is between *synthetic phonics* and *analytic phonics*. In synthetic phonics—sometimes called *explicit phonics*—children are taught the individual sounds of words and how to blend these individual sounds into word pronunciations, while analytic—also called *word analogy* phonics—emphasizes larger units of pronunciation. Table 2 (see Appendix A, p. 41) shows a brief comparison of these two approaches to the teaching of phonics. For a long time, experts have argued about the merits of synthetic and analytic phonics, and commercial programs have tended to be either synthetic or analytic in their approaches. The National Reading Panel set out to determine which of these approaches helped children more. (Although *systematic* and *synthetic* are very different concepts, some observers have interchanged them, which has resulted in some confusing and misleading

interpretations of the National Reading Panel findings. Synthetic and analytic phonics can both be taught either systematically—that is, with a predetermined daily plan of instruction—or responsively, based on teacher observations of student need.)

Does Phonics Instruction Improve Reading?

The National Reading Panel found 38 studies in which children were given a special emphasis on phonics instruction to evaluate the value of this type of teaching (NICHD, 2000). The summary of these studies led to a definite conclusion that systematic phonics instruction gave children a faster start in learning to read than responsive instruction or no phonics instruction. Phonics instruction improved kindergarten and first-grade children's word recognition and spelling skills and had a positive impact on their reading comprehension. Phonics for second-grade students (and older struggling readers) also improved their word recognition skills, but without any measured improvement in reading comprehension. (After the report was published, some researchers questioned whether these results were correct, and they reworked the entire phonics section of the report—searching for articles again, recoding the variables, and providing some very different analyses of these data [Camilli, Vargas, & Yurecko, 2003]. Despite all of these changes, the value of phonics instruction was still evident—though the positive impact was smaller than reported by the panel.)

Systematic phonics instruction clearly and convincingly outperformed the more responsive or opportunistic approaches to phonics in which teachers were expected to improvise instruction as needed. The synthesis of these studies suggested that systematic approaches provided teachers with support for teaching more phonics more thoroughly to more children. Although phonics instruction that was not systematic was better than no phonics instruction, it was not as effective as systematic phonics programs; perhaps because it is too difficult to juggle this amount of individual diagnosis, teaching, and review within the demands of a regular classroom.

Of course, the fact that it is a good idea to use some type of phonics curriculum or program to guide phonics teaching leads teachers and parents to wonder which phonics programs are best. Although more than a dozen different programs of phonics instruction were used in these 38 studies, it was impossible to determine which programs were most effective. None of these programs were used in sufficient numbers of studies to permit that kind of evaluation. But it should be noted that generally all of the phonics programs used in these studies seemed to work. The National Reading Panel findings are not specific enough to guide the choice of programs, but these findings should encourage the adoption of such programs and suggest that most programs of this type will be better than having no program or having teachers trying to improvise this kind of teaching.

For many years, reading authorities have argued whether it is best to teach synthetic phonics or analytic phonics. Those who favor synthetic approaches emphasize the ease with which the individual sounds are learned, while those who favor analytic approaches claim children can better apply the analogy approach to word recognition. Although these 38 studies examined various versions of synthetic and analytic phonics, there were no significant differences among them in terms of effectiveness. Both synthetic and analytic phonics were effective, and neither significantly outperformed the other. (Scores were somewhat higher for synthetic phonics, but this superiority was not statistically significant; that is, the differences were due to chance alone.)

Teachers should know how to deliver both kinds of instruction. For some children, sounds are too difficult to distinguish within the context of words and being able to simplify this by providing explicit single-sound teaching can make it easier to convey the concept to young children. However, children sometimes have difficulty blending together each individual sound without adding other sounds (because it is impossible to pronounce most consonants without attaching a vowel; for example, children trying to sound the individual letters in *cat* may end up with something more like /cuh/ /ă/ /tuh/). Reliance on known words as analogies can make this a more manageable task. If teachers are able to make these types of modest adjustments to phonics instruction as needed, they might increase its effectiveness.

Studies of phonics teaching suggest that kindergarten phonics instruction provides children with an early advantage in learning to read, and that additional phonics instruction in Grades 1 and 2 builds on and increases this advantage. This means children should receive phonics instruction for about three years, though some struggling learners will need to continue longer until they can successfully decode. One study estimated the proportion of children who fail to understand phonics sufficiently even with systematic instruction to be one quarter of the students (Torgesen et al., 1999). Even with this additional time for struggling readers, the short length of time for which phonics instruction is useful is surprising to some teachers and parents who presume phonics will be delivered at all grade levels for all students. An examination of Table 3 (see Appendix A, p. 41), which lists the major content taught in most phonics programs, should be revealing, as it shows how easily most children can master this amount of content from a daily agenda of instruction during a three-year period of time. Systematic phonics instruction needs to be provided beyond that only for struggling readers, though more proficient learners still can benefit from occasional reviews and with help in the sounding of more complex words or with spelling patterns not common until these grade levels, such as *–tion* or *–able*.

Advice for Teachers on Teaching Phonics

Why did phonics instruction have no impact on reading comprehension as children age? It is evident that teaching phonics to first graders has an immediate impact on reading comprehension but that is not the case with older children. This may be due to the nature of the English language and how school textbooks are constructed (Foorman, Francis, Davidson, Harm, & Griffin, 2004; Hiebert, 2002). When children are beginning to learn to read, their oral-language vocabularies far surpass the numbers of words they can read. This means that when a young child sounds out a word, there is a very good chance it will already be in his or her oral vocabulary, and therefore that decoding (translating from one form of a message to another) will be a good match for comprehension. However, as children progress through school, their oral language starts to lag behind the large number of words that may be included in increasingly technical materials from social studies, science, and mathematics (Biemiller, 1999). At those higher grade levels, when students sound out a word, there is a very good chance they would not already know the meaning of the word, and so decoding would not lead directly to meaning (just as correctly sounding out words in a foreign language would not lead to an understanding of their meanings). Phonics can only help foster improved comprehension when it leads students to pronunciations of words that are in their oral language, a process that is less likely as text grows more difficult (one basic measure of text difficulty is how uncommon the words are in oral and written language [Hiebert, 2002]). This means phonics can help older readers but only to the extent that the reading instruction is building up knowledge of word meanings.

Earlier, a distinction was made between phonemic awareness and phonics. The importance of teaching phonemic awareness prior to or early in the phonics sequence was noted. However, it should be pointed out that because the National Reading Panel wanted to determine if each of these forms of instruction was beneficial, it only considered studies in which these aspects of teaching were examined separately. This does not mean that it is best to teach them separately; in fact, the panel itself cautioned against this misinterpretation. Some programs of instruction provide young children with a heavy dose of phonemic-awareness teaching and then follow it with phonics; others mix the two together, emphasizing the phonemic awareness of particular sounds, or for these sounds, in particular parts of words (it is usually easier, for instance, to hear an /f/ sound at the beginning of a word than in the middle of it). The research does not distinguish between such approaches, and both are likely effective. The key is teaching phonemic awareness until students can easily segment words completely, and teaching phonics until students can easily decode words.

With phonemic awareness instruction, it was clear that small-group instruction was the most effective. With phonics, the group organization did not seem to matter; tutoring,

small-group, and whole-class instruction all worked equally well. This does not mean that for children who are struggling, it would not be beneficial to provide a more intensive experience either through tutoring or small-group instruction; they may still be useful. Because not everyone understands particular phonics concepts when they are first presented, it seems to be a good idea to continually monitor student success and give some students additional, more intensive phonics instruction in groups as small as is practical.

It is easy for most teachers to conceive of letter-sound teaching as the hallmark of phonics. In a synthetic approach, this might take the form of saying to the children, "Listen to the s sound. S makes a /sssssssssss/. Now you make an s sound: /ssssssss/." Alternatively, in an analytic approach the form might be, "Listen to these words: sack, sent, sip, sock, sun. Do you hear that they sound the same at the beginning: *sss-ack*, *sss-ip*, *ssss-ock*, *sss-un*? Can you think of any other words that begin like *ssss-ack* or *sss-un*?" However, it is important that phonics instruction accomplish more than only teach students which letters are associated with which sounds. It also is imperative that they learn to use this information to decode words that they cannot yet read. As soon as children know enough letters or spelling patterns to allow the decoding of new words, instruction should include opportunities to practice applying phonics knowledge to decoding words the students cannot yet read (Pflaum, Walberg, Karegianes, & Rasher, 1980), and this was a common feature of many of the phonics approaches examined by the panel.

Sometimes this demand for decoding practice as part of phonics instruction raises the possibility of using nonsense words for this practice. For example, the teacher may want the child to try to decode words such as *tab*, *tad, tag, tan*, *tap*, and *tax*. This pool of words can easily be expanded with some nonsense syllables—or words that will seem like non-sense because they will be unknown by young children—such as *tac*, *taf*, *taj*, *tak*, *tam*, *tas*, *tat*, and *taz*. Many of the programs examined in the research used such nonsense syllables for practice decoding or dictation (in which the teacher reads the words or nonsense words to the children who then try to spell them). This approach displeases some educators who worry it might confuse children. The benefit of this approach is that it expands the amount of practice that is possible, and while these syllables might not be words, often they are common syllables within other words so it is beneficial to be able to read them quickly and easily (Rozin & Gleitman, 1977). Phonics programs that use nonsense syllables are as effective as phonics programs that avoid such practice.

If nonsense syllables are to be used as part of the practice exercises, it seems prudent to minimize their use, to explain to children that they are not real words, and to explain why they are being used. Even when they are not used in teaching, it has become common practice to evaluate students' decoding using nonsense syllables (Elliott, Lee, & Tollefson, 2001). This kind of assessment is valuable as it allows decoding to be evaluated without the confusion of prior student knowledge of particular words (because children can

memorize a word that they may not be able to decode otherwise, it is impossible to separate this kind of knowledge from decoding on tests that use only real words). Unfortunately, teachers sometimes try to improve performance on such tests by teaching students to memorize the nonsense words, which should be avoided under any circumstances.

Decoding practice definitely should be a part of phonics instruction, and at least part of this practice should take place outside of the context of textual reading. The reason for this is students need to learn to use the letters and their sounds alone to arrive at word pronunciations. Good readers examine every letter and resolve every word (Rayner & Pollatsek, 1989). When a word is used in the context of a sentence or picture, then students do not necessarily need to use the letters to do the decoding. This does not mean that children should avoid reading text, only that some decoding practice should take place outside of context—and programs usually try to provide children with both kinds of practice.

An issue of frequent concern is about the nature of the text reading practice for decoding: Should it focus on what are described as *decodable texts*? Decodable texts are specially written to give children plenty of practice with particular sounds or patterns. For example: "Mig and Tig saw the pig. The pig was big. Mig put a wig on the pig. Tig danced a jig with the pig. The pig can dig. So can Mig and Tig. Mig and Tig and the pig dig." Obviously, that kind of text allows students an

abundance of practice, in this case with the *ig* spelling pattern, in a very brief time. Although some of the programs studied by the National Reading Panel used text like that, there was no way to determine whether it provided any benefit. Since the publication of the report, there have been some studies of the use of decodable text within a phonics program and the results were not promising (Jenkins, Peyton, Sanders, & Vadasy, 2004). Apparently, this level of decodability is not necessary as there were equal outcomes for the use of texts that ranged from 15 percent to 85 percent decodable. Students need reading practice, and this practice should include the sound-symbol correspondences and spelling patterns being taught, but the text can be fairly natural and certainly does not have to repeat the patterns to such a thorough extent. It also is fair to say, however, that none of the studies showed any problems resulted from brief uses of decodable text either. So small amounts of such practice may not be absolutely necessary, but they do not appear to be damaging either. The earlier advice seems appropriate here as well: If decodable text is to be used, then children should receive an explanation of why it is being used and why, unlike other text, it may not make much sense.

The role of spelling in phonics instruction is interesting. The value of having students attempting to spell words through dictation was seen in several of the studies examined by the National Reading Panel (e.g., Blachman, Tangel, Ball, Black, & McGraw, 1999; Bond, Ross, Smith, & Nunnery, 1995; Lum & Morton, 1984; Santa & Hoien, 1999). Similarly, the

National Reading Panel concluded that invented-spelling activities, in which students are encouraged to spell words as they think they should be spelled, was supportive of phonemic awareness development (NICHD, 2000). Phonics instruction provides children with knowledge of the aural patterns and correspondences, while spelling activities provide practice in applying this knowledge through writing. Encouraging young children to attempt to spell words based on their sounds is an effective approach to supporting phonics learning.

One of the more difficult challenges in the teaching of phonics is students' dialects, especially when teachers and students speak different dialects. English language users can vary in their pronunciations of words, and this means that sound-symbol correspondences are likely to vary as well. These dialect differences are associated with region, race, and ethnicity, and it is important that we prevent these differences from interfering with student progress in learning to read. The key for the teacher is to be observant about the dialect differences that exist in the classroom and to adjust phonics teaching accordingly. The key for students is to match the letters to their usual pronunciations of the words. In one particular dialect, words like *yard* and *park* have very definite *r*-sounds, while in a New England dialect these words are spoken as if there were no *r* at all (*y-ah-d*, *p-ah-k*). If a person is teaching phonics to children in Boston who speak that dialect, it is important for them to learn how to read words with the *ar* spelling in their own dialect but not for the students to learn the teacher's dialect.

Phonics Summary

Students in Grades K–2 and older remedial readers all benefit from being taught how to use letter sounds and spelling patterns to decode words. The use of systematic approaches or programs of phonics instruction were found to be more effective than more opportunistic or responsive approaches. Activities like dictation or invented spelling, in which students try to write or spell words based on the sounds, have been found to help children learn phonics.

Oral Reading Fluency

Some Definitions and Distinctions

Oral reading fluency is the ability to read text aloud with accuracy, speed, and proper expression. It is important for students to learn to read an author's words with few deviations (*accuracy*), to process text with a *speed* sufficient to permit comprehension to occur, and with appropriate pausing and emphasis so that the text sounds meaningful (*expression*). Although it is often assumed that fluency is only the product of high-speed word recognition, studies show that fluency entails more than solely decoding, and that it is possible to teach fluency directly through various forms of oral reading practice.

For a long time, scientists have studied the connections between oral and silent reading behaviors, but this relationship is still somewhat puzzling (Allington, 1984). It is possible there are important differences between the cognitive processing that occurs during oral and silent reading. However, even if these two forms of reading are distinctly different cognitively, this tells nothing about what impact oral-reading teaching and practice may have on silent-reading proficiency.

Another important distinction that should be made is between modern oral-reading fluency instruction and more traditional round-robin reading instruction. Reading authorities have condemned the practice of having children taking turns reading aloud while everyone in the classroom follows along. Studies suggest that much of the time devoted to round-robin reading is wasted in terms of student learning. Only the reader appears to gain any benefit from this practice, while the listeners learn nothing (Stallings, 1980). Of course, most children are listeners in this situation, so they spend most of their time waiting instead of learning. None of the instructional approaches described here should be used in a traditional round-robin format.

Does Fluency Instruction Make a Difference?

The National Reading Panel examined 51 studies of oral-reading fluency instruction and found a substantial pattern of evidence supporting the idea that teaching oral fluency improves reading achievement (NICHD, 2000). Fluency instruction improved reading no matter how it was measured. Of course, fluency instruction improved oral reading fluency itself, but it also had a positive impact on children's decoding, word recognition, silent-reading comprehension, and overall reading achievement as measured by group-administered standardized tests.

These positive findings were obtained for a wide range of students as well. Originally, fluency instruction was recommended for

use with particular types of remedial readers, but although fluency teaching does help low-achieving readers, it also has been shown to have a positive influence on the more typical range of student reading abilities in the regular classroom. In fact, the effects are equivalent for both groups, meaning that one should expect about the same amount of learning from such teaching for all children.

The studies that the panel reviewed showed positive impacts with children from Grades 1–9. The studies in regular classrooms were conducted in Grades 2–4, while the remedial reading studies took place in Grades 1–9. Since the panel issued its report in 2000, more studies on oral fluency instruction have appeared, including some in which fluency teaching was found to help bilingual students (Chafouleas, Martens, Dobson, Weinstein, & Gardner, 2004; De la Colina, Parker, Hasbrouck, & Lara-Aleicao, 2001).

How Do We Teach Fluency?

Many different approaches have been used to teach oral reading fluency successfully— repeated reading (Samuels, 1979), paired reading (Stevens, Madden, Slavin, & Farnish, 1987), neurological impress (Heckelman, 1969), echo reading (Mathes, Torgesen, & Allor, 2001), listening-while-reading (Rasinski, 1990), radio reading (Greene, 1979), work with tape recorders (Chomsky, 1976), and so on, but each of these techniques shares three essential features with the rest. The first common characteristic of quality fluency instruction is that it must include oral reading as opposed to silent reading. Research has consistently supported the positive impact of oral reading practice, while silent reading has had less consistently positive results.

A second essential feature of successful oral reading instruction is that it includes repetition; that is, students are asked to read and sometimes listen to a text repeatedly. The goal is for students to practice reading texts aloud repeatedly so that improvement occurs in accuracy, speed, and expression. Research has shown that students usually improve the quality of their oral reading with each repetition (Levy, Campsall, Browne, Cooper, Waterhouse, & Wilson, 1995), and that this improvement transfers or generalizes to the reading of other texts. (After some time, the number of repetitions needed to read a text well usually declines—showing that learning and not just memorizing is happening.)

The third essential feature of oral reading instruction is that students benefit from guidance or feedback. It is important for the reader to have a listener who can provide some help. Studies examined guidance provided by teachers, parents, volunteers, and peers, with positive results for all approaches. Activities such as paired reading, in which children take turns reading to each other, were quite successful (Stevens et al., 1987).

The National Reading Panel concluded that these features of oral reading instruction— reading aloud, rereading, and one-on-one feedback—seem to be essential for the success of fluency teaching. However, for many teachers these features also pose a

formidable barrier against welcoming these routines to their classrooms. Fluency instruction tends to be noisy, much of the learning takes place outside of the teacher's immediate observation, and providing appropriate partners can be a challenge. However, it should be noted that in the research studies reviewed by the panel, classroom teachers were able to carry out these routines successfully with little special support or materials.

Advice for Teachers on Teaching Oral Reading Fluency

The most common teaching situation is probably a classroom in which there are no volunteers, aides, cross-age tutors, visiting parents, or other human resources beyond the teacher and the children themselves. Paired reading is an excellent technique to use under such circumstances. The teacher pairs two children with the same text. One child is the reader and the other is the guide, then the roles reverse. In this plan, students take turns reading brief portions of texts (50–150 words) to each other. The guide determines whether the reading quality is adequate; if there are problems with accuracy, speed, or expression, the guide asks the reader to reread. These guides also help, saying unknown words for the reader or modeling what the reading should sound like (Koskinen & Blum, 1984; Stevens et al., 1987).

Partners can do this work better if they have a clear understanding of fluent reading and have simple procedures to guide their work.

One of the most workable approaches—which has been employed successfully by teachers, parents, and students—is Pause, Prompt, Praise. (Wheldall, & Mettem, 1985). for an explanation of how to use Pause, Prompt, Praise.

Class sizes vary, as do the dimensions and arrangements of classrooms, so a one-size-fits-all plan for fluency instruction is unlikely to work. The general goal is to have all of the children simultaneously paired for reading. That means that there will be many readers reading aloud at the same time, while the teacher circulates through the room interacting with pairs of students. Due to the independence of this activity, it is critical that students fully comprehend what is to happen. Teachers should take a brief period of time at the beginning of these fluency sessions to talk about what good reading sounds like and to remind students of any management rules. Students need to use their "12-inch voices" for this kind of activity; just loud enough for the partner and the teacher to hear. (If there are many students reading, it can be helpful to place them facing different directions so that one pair is not reading directly toward another.)

Not all reading partners are equally effective—even with training. Not everyone is patient or helpful, and sometimes a student's reading weaknesses will limit the amount of support he or she can provide. Learning is more likely to occur when students have helpful partners. To use this learning time efficiently, it is a good idea to match students within the same book, rather than having them trying to coach

in different materials. Instead of always matching the same students with each other, vary the partners; the purpose of this is to guarantee that no one is always paired with a weak guide. If there are aides or volunteers available, pair some of the students—the particularly low-achieving readers—with them for this activity (so these students can use all of the time for reading rather than coaching).

The students in some studies were required to maintain progress records (De la Colina et al., 2001; Samuels, 1979). This usually consisted of keeping track of the numbers of errors or the numbers of rereadings needed. In other studies, the students actually timed their own "correct words per minute." (This is easily calculated by listening to a child read aloud for one minute and then counting all the words the student read correctly in that time, though not counting the miscues or errors. If the student is to read for an extended time, count all the words read minus any mistakes; this is easiest to do by counting all the words from the beginning of the text up to where the student stopped reading and then subtracting any errors that were made during the reading. Divide this result by the number of seconds read and multiply by 60 to find the total for minutes.) These kinds of activities let students see how they are doing and can be motivational too. It can be useful to have the partners list the words they can't read; this gives the teacher a chance to help the students with those words and keeps students from wasting time waiting until the teacher is free. Teachers themselves often find it helpful to keep track of how well the children

are reading when they work with the pairs. It can be worthwhile to listen to several students reading each day and to make notes about their fluency. This is helpful later when talking to parents or filling out report cards.

There are many good choices for materials to use for fluency practice. Many teachers seem to think that poetry is a good choice for this purpose, but the research has focused more on the reading of prose articles and stories. Many of the studies used expository texts drawn from social studies and science while literature was used in others, and both worked well. The texts used for oral reading can be of any length (from brief passages to entire books), but longer texts should be divided into shorter chunks for oral reading practice (in most studies, chunks of 50–150 words were used). In paired reading, one student reads a passage of this length, and then the partner reads the next section. Teachers can use literature anthologies, social studies or science books, library books, magazines, or even specially designed fluency practice materials for this work.

The difficulty of the material has been of some interest to researchers, though this work was not included in the National Reading Panel Report. It appears that students can learn well when practicing from texts written in a fairly wide range of difficulty (Morgan, Wilcox, & Eldredge, 2000; O'Connor, Bell, Harty, Larkin, Sackor, & Zigmond, 2002). Studies show that materials that are on students' instructional levels, or even frustration levels, can lead to learning, but teachers must provide more support (e.g., more rereading, more feedback,

more encouragement) when the materials are harder. Independent materials—those students find very easy to read—are not recommended for fluency work (Kuhn & Stahl, 2003).

Technology can be a useful support with fluency as well. Students can engage in reading-while-listening activities (in which they practice reading along with a tape-recorded text). CD players, tape recorders (including digital tape recorders), and CD-ROM devices all can be useful in supporting or extending oral-reading fluency instruction because they allow students to listen to models of oral reading and to record their own performances.

Many teachers like the idea of Reader's Theater, in which students transform texts into plays and read those aloud (Maclay, 1971). There is no reason to think that this kind of activity would not support fluency learning given its consistency with the types of practices found to be effective, but the National Reading Panel found no direct studies of its effectiveness. There are some potential drawbacks to Reader's Theater, however, that would suggest caution. For example, students tend to get very different amounts of practice in Reader's Theater because characters in a text have different amounts of dialogue, and often much time is spent waiting for other students to read their lines—not unlike round-robin reading. For these reasons, it is recommended that Reader's Theater be used as an occasional reading activity, mainly for motivational purposes, until its effectiveness is directly proven.

How many times should teachers have students reread a text? The studies reviewed by the National Reading Panel used two approaches toward repetition. In one set of studies, students were asked to reread until they met a criterion standard of success (usually an ability to read the text with about 98 percent accuracy). In other studies, students reread the text three times before moving on to another selection. Both approaches worked well according to the studies, so teachers have some latitude in choosing the best way to carry this out in their classrooms.

Oral Reading Fluency Summary

Oral reading fluency instruction provided learning benefits to students in a wide range of grade levels, particularly when they were practicing oral reading with materials written at an instructional or frustration level. Instruction in which students read portions of text aloud repeatedly with feedback from a peer, parent, or teacher helped students to become better readers. These improvements were evident with word reading skills, oral reading fluency, and oral and silent reading comprehension.

Vocabulary

Some Definitions and Distinctions

Vocabulary here refers to word meanings and *vocabulary instruction* is about the teaching of word meanings. Unfortunately, because much of reading instruction is focused on words—word recognition, sight words, word attack, word structure, word sorts, and so on—*vocabulary* is often used to refer to both word recognition and word meaning. Certainly, as the earlier sections of this monograph have made clear, decoding skills are as important as other aspects of word recognition such as sight vocabulary development. The coverage here of vocabulary, as in the original National Reading Panel Report, will be limited to a consideration of how to effectively teach children word meanings and the impact such instruction has on reading comprehension.

The importance of vocabulary is beyond doubt. Knowledge of word meanings is even assessed as a fundamental component of intelligence or general cognitive functioning. Such knowledge is integral to any activities that involve language, and psychologists have shown how vocabulary is more than a list of "word meanings in the mind," but actually functions as an index of a much richer and harder to measure constellation of understandings and experiences (Anderson & Pearson, 1984). Someone who knows a lot about horses may develop an awareness of many horse-related words (e.g., saddle, bridle, fetlock, hoof, bit, palomino, sorrel, spavin, mane, yearling), but they also will usually know many kinds of other related information (e.g., animal behavior; how to care for pets; what stables, barns, and corrals are like). However valuable the individual words may be, an understanding of them usually includes more than simple dictionary definitions and carries an awareness of much associated knowledge and appreciations. It is not surprising that vocabulary is so important in any language activity.

Just as there is no dispute about the importance of vocabulary in reading, there is no disagreement about the idea that children learn many words without any obvious formal instruction. Incidental learning of vocabulary—from language interactions with others, media, reading, and so on—is both obvious and impressive. Scholars have not been able to agree upon the proper estimate of the number of new words children add to their memories each year, but all agree that the number is large and that it outstrips the numbers of words taught in school (Nagy, Anderson, & Herman, 1987).

Of course, not all children receive the same level of support from their environments, and it is widely accepted that these differences mediate differences in children's acquisition of vocabulary. In their landmark study in the

homes of 42 families, Hart and Risley (1995) showed that children in low-income families were exposed to half as much spoken language during their first four years of life than were children from working-class families.

What is still open to question is the benefit to be derived from the formal or direct teaching of vocabulary to students within reading instruction. Because children learn so many words without instruction, how much benefit could there be in enriching this growth by a few hundred additional words per year? In addition, the English language has a large number of vocabulary items (the *Oxford English Dictionary* defines more than 250,000 words). Although there is a relative handful of words that are used with great frequency (about 20,000), most words appear less than one time per million running words (Zeno, Ivens, Millard, & Duvvuri, 1995). It is difficult to understand how teaching a few thousand words throughout a school lifetime would have much impact on comprehension because the chance of confronting any of these words in any given text would be small.

The issue that the National Reading Panel attempted to resolve—and to which the original research was addressed—was whether such vocabulary teaching, as inadequate as it might seem, could have sufficient power to improve students' reading comprehension. The purpose of the synthesis was not to figure out whether vocabulary could be taught (which is assumed), but rather how useful such instruction would be for developing reading comprehension.

Does Vocabulary Instruction Improve Reading?

The National Reading Panel reviewed 45 studies on the teaching of vocabulary—and several past reviews of vocabulary research—and concluded that such instruction did result in improved reading achievement as measured by reading comprehension tests. Explicit instruction in vocabulary includes teaching students the meanings of words, techniques to determine word meanings from context, and the meanings of word roots and affixes. These kinds of instruction have been found to provide students with clear and consistent gains in reading. There also were benefits from less directive approaches—reading to children or encouraging them to read—which present vocabulary more implicitly.

Most of the vocabulary studies reviewed by the panel focused on students in Grades 3–8, but there also were some studies in Grades PK–2 and Grades 9–11; all had appreciably the same results. Explicit and implicit approaches to vocabulary teaching were found to be effective across the grades, so the panel concluded, "Vocabulary should both be taught directly and indirectly" (NICHD, 2000, p. 4-24).

Most of the specific instructional practices for teaching vocabulary that were examined by the panel conferred an advantage in learning to read. Often, these studies compared an enriched form of vocabulary teaching with a more traditional form, usually copying definitions and sentences from the dictionary. The experimental

procedures repeatedly led to the best performance, making it easy to conclude that traditional dictionary work is not particularly helpful in increasing student vocabulary. On the other hand, multiple or enriched definition procedures, semantic mapping and categorization, computerized approaches, keyword methods, and mixed-method procedures all provided some learning advantage. That means there are many instructional procedures that can be used to teach vocabulary successfully.

Advice for Teachers on Teaching Vocabulary

Because the National Reading Panel presented positive findings for both incidental and explicit vocabulary teaching, it is important that teachers allot time for the direct teaching of vocabulary, but they also should seek opportunities to enrich vocabulary knowledge throughout the school day within other activities. One such opportunity examined by the panel concerns introducing new vocabulary words that students are about to confront in their reading. Talking to the students about these words ahead of time was found to increase word knowledge and improve students' understanding of their reading of that selection—and this was found both with language arts and social studies materials.

Reading texts to younger children can influence their vocabulary learning, and teachers should show care in the selection of these materials to ensure that they introduce useful words with sufficient context and illustration. For example, when a teacher is reading to children, he or she might stop and ask, "What does it mean when it says, 'The baby ducks waddled after their mother?' What does *waddled* mean?" Some students might know the answer, or the teacher might have to provide an explanation and perhaps a demonstration. Reading to students can be an important venue for the discussion of words. Older students become aware of new vocabulary more often through their own reading, and, again, it is crucial to find ways to support their learning of the new words they meet in reading. Studies suggest lower achieving readers acquire less incidental vocabulary than good readers acquire (Biemiller, 1999), so bringing attention and support to these new words is vital.

It is important that the texts used for supporting vocabulary growth in reading and listening include plenty of repetition or extended use of the new words throughout the text. A single contact with a word will rarely lead students to know a word's meaning (Nagy et al., 1987). This is true with explicit vocabulary instruction as well; review has been found to be an important ingredient in stimulating long-term vocabulary learning (Beck, Perfetti, & McKeown, 1982) and many programs fail to provide sufficient review (Beck & McKeown, 2005), which may be why students can perform well on a weekly vocabulary quiz but not know the word later. Using texts with systematic repetition of words in many contexts and maintaining ongoing lists of taught words are good ideas, as they permit frequent review. The panel

found that research showed superior learning in programs that continually recycled words throughout the school year.

Given the large number of words in the English language, which ones should be taught more thoroughly? Here, Isabel Beck's concept of vocabulary tiers can be useful (Beck, McKeown, & Kucan, 2002). She divides vocabulary into three levels or tiers. Tier one includes high-frequency words (e.g., *of, the, is, where, how*) that are common in oral and written language; these words usually require little formal attention in terms of word meaning (though they certainly merit attention in terms of word recognition). Tier-three words are technical words linked to specific content learning (e.g., *genome, sine, oligarchy*); these words are neither common nor widely used, and again, these should receive little attention in a reading program. In contrast, tier-two words are relatively common words that have wide use across many contents but occur infrequently enough that many children may not learn them without some assistance. Tier two includes words like *orient*, *vertical*, *merit*, and *stride*.

Successful vocabulary instruction programs select words that are important, in terms of their frequency and breadth of use, but that are unlikely to be known by children. These are words that, while common, are not necessarily easily learned without assistance. For these words, instruction is useful. Of course, instruction can try to teach too many words to foster real success. Successful programs of vocabulary instruction introduce only a few hundred words per year,

and teach these thoroughly—to the point where children can remember and use them in their reading and writing (Beck & McKeown, 2005).

The goal of vocabulary teaching is to build an understanding of the words, and it should be no surprise that successful instructional approaches lead students to deeply engage in thinking about the word meanings. Activities like copying definitions from a dictionary are not effective because they can be done superficially, without thinking about what the word means or how the word relates to other words. One highly successful approach to vocabulary instruction engages students in formulating several kinds of definitions and explanations for the words (see Table 5, Appendix A, p. 42, for some of the types of definitions that can be used; this chart has been completed for the word *nimbly*). Each of these definitions requires something different of the children, and each helps to deepen understanding of the word. For example, synonyms are easy because they can be found in a thesaurus, but comparisons may be harder because they require the students to discern shades of differences among synonyms. In the example in Table 5, the idea presented is that someone who moves nimbly moves fast, but that this movement is more than speedy—it is smooth and well-coordinated too. Alternatively, the real-life example requires the student to try to apply the word to a personal experience, which can make it easier to remember, as does translating words into different forms such as pictures or actions. Such activities

are usually carried out by groups of children working together so they entail much discussion and writing as well.

Another important aspect of vocabulary teaching is an emphasis on the relationships among word meanings. It is not enough to teach single words, as these are less likely to be remembered than when they are connected into networks of meaning. It is easier to understand a word like *occasional* if it can be linked with other words and concepts such as *never*, *frequently*, or *sporadic*. Words tend to have shades of meaning, and reading comprehension can depend upon being able to distinguish these fine gradations of meaning. Semantic maps and webs can be useful tools for such activities as they lead students to compare related concepts in graphic ways. For example, students might be asked to chart the following "ways of talking" in terms of how loud or distinct the talk would be: whisper, murmur, yell, scream, shout, talk, bellow, cry, roar, mutter, utter. Exploring the difference between an utter and a mutter provides students with a deeper understanding of both words.

read independently allow many opportunities for students to gain knowledge about words. Direct instruction of vocabulary, in which teachers provide students with explanations and a thorough analysis of word meanings can foster such a thorough knowledge of word meanings that reading comprehension improves. The most effective direct instruction in vocabulary helps children gain deep understanding of word meanings (much more than simple dictionary definitions); requires plenty of reading, writing, talking, and listening; emphasizes the interconnections among words and word meanings and the connections of words to children's own experiences; and provides abundant ongoing review and repetition.

Vocabulary Summary

Vocabulary refers to the teaching of word meanings. Studies have shown that teaching students the meanings of words and of word parts such as prefixes and suffixes can have a powerful impact on reading comprehension. Vocabulary instruction should be both indirect and direct. Indirect activities such as reading to students or encouraging them to

Comprehension Strategies

Some Definitions and Distinctions

Reading comprehension is the act of understanding and interpreting the information within a text. Comprehension is about the construction of meaning more than about passive remembering. It is a form of active and dynamic thinking and includes interpreting information through the filter of one's own knowledge and beliefs, using the author's organizational plan to think about information (or imposing one's own structure on the ideas), inferring what the author does not tell explicitly as well as many other cognitive actions. Successful comprehension requires the thoughtful interaction of a reader with a text.

It should be evident from the material already presented that there are many successful avenues to improved reading comprehension, including the teaching of phonemic awareness, phonics, oral reading fluency, and vocabulary. Studies showed that all of these forms of instruction influence how well students can construct meaning from text. This is not surprising. Reading— in fact, any language activity—is dependent on many levels of language skill. If a student

lacks the phonemic awareness and phonics skills to translate written text into oral language, reading comprehension will be blocked no matter how well the student can think about the ideas (which is why young children can understand texts through listening that they are not yet able to "read"). In fact, one "simple view" of reading that often has been discussed claims that reading is simply decoding plus listening comprehension (Hoover & Gough, 1990); the concept is that a child should be able to understand anything that he or she can decode or read fluently. According to that view, reading comprehension instruction per se would not be worthwhile; the responsibility of the teacher would be to make sure the student had sufficient decoding skills and oral language development.

The National Reading Panel attempted to determine whether the direct teaching of reading comprehension would provide a benefit to children. Most of the comprehension instructional practices examined in this section of its report were forms of what is commonly referred to as *comprehension strategy instruction*. The word *strategy* is useful, but unfortunately it is often confused with the idea of *teaching strategies*. Comprehension strategies are intentional actions that a reader can take to increase the chances of understanding or remembering the information in a text. Instructional strategies, by contrast, are actions or procedures that a teacher might use to teach something. The issue here is whether it is possible to teach children to use comprehension strategies independently to guide their own thoughtful interactions with text. Strategy instruction

explicitly teaches students thinking processes or problem-solving techniques that can be used intentionally to construct understandings during reading or to increase the possibility of remembering the information that was read.

Another important distinction that should be made is the difference between skills and strategies. In many treatments, these words are treated as synonyms, but that is not the case in the National Reading Panel Report or in this monograph. When teaching phonics or vocabulary, the goal is that children will use these automatically (that is, without conscious attention); in fact, one of the reasons that it is important to teach these so well is so that students can use them without distracting attention from making sense of the text. Skilled activities are activities that can be done quickly, easily, and with little or no conscious attention (this also is referred to as *automaticity* [LaBerge & Samuels, 1974]). Strategies are different from skilled activities. To use strategies well, the student has to be reflective and purposeful; instead of trying to do something quickly without paying attention, strategies slow the reader down and focus his or her attention according to the demands of purposes and needs. When someone wants to understand and remember a text very well, he or she should preview the text carefully to form a clear idea of what it might be about; think about what is already known about a topic or make predictions about what information will be presented; stop along the way during reading, and ask questions about what the text says (and try to answer these self-posed questions); and summarize the text occasionally to make

sure it is being understood. None of these actions speeds a reader along. None of these can be done without thinking. None of these are useful if they are carried out without intention or purpose. Strategies, unlike skills, require conscious, purpose-directed actions.

For many years, it was widely accepted that if a student could read the words, reading comprehension would result automatically. However, for the past three decades researchers have studied whether students could be taught to read in ways that would improve reading comprehension beyond what occurs solely from fluently reading the text.

Can Reading Comprehension Be Taught Directly?

The National Reading Panel examined 205 studies of reading comprehension instruction (NICHD, 2000). These studies considered the effectiveness of both single strategies like summarizing as well as more complex collections of strategies used in combination. Studies on the impact of 16 different strategies or combinations of strategies were located. Generally, all of the strategies studied were found to confer some learning advantage on students, but the value of an approach is best determined by evidence showing its reliability across repeated research studies. For that reason, the panel focused on those strategies that garnered substantial amounts of supporting evidence rather than on promising approaches that still lacked sufficient research evidence on which to conclude they would consistently help.

The National Reading Panel concluded there was sufficient evidence supporting the teaching of seven comprehension strategies. These strategies are (with the numbers of studies synthesized on each strategy in parentheses): question asking (27), monitoring (22), summarization (18), question answering (17), story mapping (17), graphic organizers (11), and cooperative grouping (10). Two other strategies—prior knowledge (14) and mental imagery (5)—also were successful in many studies. However, as useful as any of these single strategies were, the most learning was obtained when multiple strategies were taught in combination. There is a large amount of evidence supporting the effectiveness of teaching reading comprehension directly by focusing on student strategy use.

Advice for Teachers on the Teaching of Reading Comprehension

In most studies of reading comprehension, an effort was made to ensure that students could already read the texts—in terms of word recognition or fluency—that would be used in the study. Because the researchers wanted to know the impact of comprehension-strategies instruction, they would not want to have the results of such instruction undermined by a lack of these underlying skills. For this reason, comprehension studies usually focus on students who can already decode the text. This is reasonable for the research, but it is also a reasonable approach in the classroom.

Students will be unlikely to learn or use a comprehension strategy if using texts so difficult that most of their attention must be used for basic decoding.

Other aspects of text, aside from difficulty, matter as well. Different kinds of texts place different demands on learners. The successful reading of a story entails an understanding of characters and their relationships, plot structure, how episodes interconnect, the interpretation of mood and theme, and so on. Rarely does the reading of mathematics, science, or even social studies include these text features; just as stories rarely include the formal analysis of cause and effect, comparisons and contrasts, or other analytic structures common to expository text. Texts differ in the nature of the vocabulary as well. Due to these significant differences in narrative and expository text, it is important that reading comprehension instruction focus on different kinds of texts. For many years, the reading comprehension practice and instruction provided in schools has focused heavily on the reading of literature texts alone (Duke, 2000; Venezky, 1982). The problem with that approach, due to the big differences between literature and exposition, is that students cannot easily generalize these literature-reading skills to science or social studies. Well-formed reading comprehension instruction includes substantial emphasis on both narrative (such as stories and novels) and expository or explanatory texts (such as those that should be common to the social studies, mathematics, or science classrooms).

The previous sections of this monograph have focused on skills teaching, and activities that fostered plenty of repeated practice were often championed. Strategies differ from skills, and good strategy teaching differs from good skill teaching. Drill and repetition will not help in the teaching of reading comprehension, but sound explanation is central. One particularly successful approach to teaching reading comprehension is reciprocal teaching (Palinscar & Brown, 1984). Reciprocal teaching is one of those approaches studied by the National Reading Panel that taught multiple strategies simultaneously. The emphasis here is not on the multiple strategy aspect of reciprocal teaching, but upon the actual teaching approach: Reciprocal teaching provides an excellent model for all strategy instruction.

The reciprocal teaching approach has been described as a gradual release or transfer of control or responsibility (Palinscar & Brown, 1984; Rosenshine & Meister, 1994). That means the teacher carries out the task first by providing a demonstration. This demonstration includes a clear explanation of what the strategy is, a description of how and when to use it, and, finally, an explanation of why it is useful. If the lesson was focused on questioning, the teacher might begin like this: "Good readers want to remember what they read. Unfortunately, if you just read through something from beginning to end without thinking about it more, you won't remember it. That's why good readers stop along the way to ask themselves questions about what the text is saying, and they try

to answer their own questions from memory (and if they can't answer these questions, they go back and look for the answer before proceeding). You can stop and ask those questions any time, so for now, to make sure I ask enough, I will stop at the end of every page. Here is how I ask questions that will help me...." Then the teacher would show the children how to do this with a text. The explanations of what, how, when, and why are important, so teachers should clarify those ahead of time—clarity of explanation makes a difference in student learning in terms of reading comprehension.

Once the strategy has been clearly explained and demonstrated, the teacher then has the student perform the activity with an abundance of guidance and support. Initially, the teacher may remind students of the strategy, repeating much of the explanation from the demonstration. Then the students are expected to read a story or article, and the teacher has them stop to ask and answer questions along the way. At this stage, the teacher is still doing much of the work; the students read and ask and answer the questions, but it is the teacher who explains why, establishes when to stop, and directs the students to do their part. After some time, the amount of support should be reduced—while always ensuring that the students succeed. This might take the form of the teacher prompting students to provide the explanation or the decisions: "What strategy are we working with? Why is it important? Where are we going to stop today? What will we do when we stop?" In

some of the studies, the researchers would put particular children in charge of providing the explanation or asking the questions or providing the answers.

Finally, the teacher attempts to give the responsibility for the strategy to the students, and require that they carry it out more independently. This might take the form of independent work in which students keep a chart listing where they stopped, what they asked, and how they answered their own questions. Alternatively, the students might do this in a discussion group run by the students themselves—with the teacher outside the circle monitoring success.

This gradual release of responsibility or "I do it—We do it—You do it" approach to comprehension strategies is a good one and with practice, it results in students being able to use the strategy, to explain it, and, ultimately, to improve reading comprehension (Palinscar & Brown, 1984; Rosenshine & Meister, 1994). Table 6 (see Appendix A, p. 43) includes a description of some of the forms of strategy teaching that have been effective. Most of these can easily be taught through the gradual release-of-responsibility approach.

Table 6 emphasizes single strategies, and all that are included here have been studied frequently and with positive results in terms of student learning. Nevertheless, research has shown that teaching students multiple strategies is more effective than teaching single strategies.

There are many approaches to teaching multiple strategies, but the one that has garnered the greatest research attention is reciprocal teaching. Reciprocal teaching shows students how to use four strategies in combination during reading. The four strategies included in reciprocal teaching are prediction, questioning, clarification, and summarization. Prediction requires students to briefly examine a text and make guesses or hypotheses about what will occur or what information will be provided in the text. It is important that these predictions be elaborated enough that they guide the students' engagement with the text. For example, it is not enough for the student to say, "I think this story is about a boy." The instruction must guide the student to make some guesses about what the problem is that confronts the boy, and how the boy might resolve it, and the student must include an explanation of why he or she made those predictions. The purpose of predictions is that they require the reader to bring his or her knowledge to the text interpretation; this is important because readers use prior knowledge to help resolve ambiguities, to make inferences, and to reduce the need to remember everything that an author has said. Predictions also help by giving the reader a purpose for reading; to see how the predicted information differs from what the author actually includes. The importance of the other three steps—questioning, clarification (monitoring), and summarization— has been explained in Table 6. The goal of any multiple-strategy approach is that students will use these various strategies

in combination so they can solve a variety of problems for themselves in trying to understand an author's message.

Finally, it should be noted that in most studies, these reading comprehension strategies were taught with a substantial amount of intensive instruction. If students were being taught to summarize, summarization was the focus of daily lessons for several weeks with plenty of explanation and varied practice. Unfortunately, while many commercial programs seem to recognize the importance of teaching comprehension strategies because they include them, this instruction rarely mimics the thorough instruction that is evident in the studies in which strategy instruction worked well. In the comprehension studies that the National Reading Panel examined, strategy instruction entailed daily lessons dedicated to a particular strategy for four or more weeks. Compare that to the typical coverage in most core reading programs. Either teachers must seek programs and materials that will provide students with sustained attention to particular strategies, or they need to provide this more continuous attention themselves.

Reading Comprehension Summary

Research has shown that students can be taught to comprehend the material better while they are reading. Successful instruction of this type has usually focused on the teaching of comprehension strategies—that is, intentional actions students can use during reading to guide their thinking. Such strategies improve both understanding and memory. Some strategies that have been successfully taught include summarization, questioning, story maps, comprehension monitoring, and graphic organizers; however, the teaching of the combined use of multiple strategies has been most effective in improving reading. Strategy teaching is most effective when it takes a gradual release-of-responsibility approach in which the teacher models the strategy use ("I do it"), guides students to use it successfully within reading ("We do it"), and then assigns independent practice with the strategy ("You do it"). Reading comprehension instruction needs to take place in both narrative and expository text.

Final Words

Since the National Reading Panel Report was released in 2000, many relevant things have happened. President Bush and the U.S. Congress adopted the report as the cornerstone of federal literacy policy. One program established in pursuit of this policy is Reading First. Reading First provides funding to struggling schools to make more resources available: instructional programs, professional development, assessment, and interventions to address the needs of struggling readers. This effort is concentrated on Kindergarten through Grade 3, and everything in this program must focus on phonemic awareness, phonics, oral reading fluency, vocabulary, and reading comprehension strategies. The goal of Reading First is that because the research has consistently shown instruction that addresses these particular elements of reading confers a learning advantage to children, we should limit the use of these funds to carrying out this kind of teaching. It is too early to evaluate the effectiveness of this $5 billion initiative, but preliminary information suggests that it is promising. At this stage, other federal programs such as Title I and the Individuals with Disabilities Education Act are beginning to move in the direction of Reading First—encouraging greater attention to the research findings toward improving literacy achievement. In addition, commercially published instructional programs are increasingly incorporating the National Reading Panel findings into their materials. (Technically, Reading First is part of Title I. However, it has different eligibility and program requirements than Title I and is leading to a rethinking of the rest of the Title I program.)

Another outcome of the National Reading Panel Report has been an increase in public desire for research information on more topics. Currently, there are several efforts under way to deliver such information. For example, the National Early Literacy Panel is examining what is effective in preschool literacy, and the National Literacy Panel for Language Minority Children and Youth is examining what is known about the teaching of literacy to students for whom English is a second language. The U.S. Department of Education has established the What Works Clearinghouse, which is trying to identify the research basis for many instructional programs, not only in literacy. Other panels and reviews are sure to commence in the future as well.

Finally, the heightened use of research as the basis of teaching has stimulated more research. This research, especially that funded by the federal government, has taken a more direct look at the effectiveness of instruction and instructional approaches throughout the past few years.

These subsequent developments all could affect the use or even alter the findings of the National Reading Panel. The fundamental concept of the panel report was that instruction should adhere to common standards of practice arrived at through a careful and public synthesis of research findings. Such an approach can do much to improve and standardize instruction, but ultimately it cannot result in a permanent set of standards. What is known is always evolving and new studies and new syntheses will alter these practices in the future. For much of the 20th century, instructional practices in reading were the result of fads, styles, debates, and a swinging pendulum. One hopes that for children in the 21st century, reading instruction will focus on empirical search for the most effective ways to teach literacy. This summary gives important partial clues as to what reading instruction needs to be like in order to be effective; after some time, even more of the picture will be filled in with information from research.

References

Adams, M., Foorman, B., Lundberg, I., & Beeler, T. (1997). *Phonemic awareness in young children: A classroom curriculum*. Baltimore: Brookes.

Allington, R. L. (1984). Oral reading. In P. D. Pearson, R. Barr, M. L. Kamil, & P. Mosenthal (Eds.), *Handbook of reading research*. New York: Longman.

Allington, R. L. (2002). *Big brother and the national reading curriculum*. Portsmouth, NH: Heinemann.

Anderson, R. C., & Pearson, P. D. (1984). A schema-theoretic view of basic processes in reading. In P. D. Pearson (Eds.), *Handbook of reading research* (pp. 255–291). New York: Longman.

Beck, I. L., & McKeown, M. G. (2005). Different ways to different goals, but keep your eyes on the larger verbal goals. In E. H. Hiebert & M. L. Kamil (Eds.), *Teaching and learning vocabulary: Bringing research to practice*. Mahwah, NJ: Lawrence Erlbaum Associates.

Beck, I. L., McKeown, M. G., & Kucan, L. (2002). *Bringing words to life*. New York: Guilford Press.

Beck, I. L., Perfetti, C. A., & McKeown, M. G. (1982). Effects of long-term vocabulary instruction on lexical access and reading comprehension. *Journal of Educational Psychology, 74*, 506–521.

Biemiller, A. (1999). *Language and reading success*. Cambridge, MA: Brookline Books.

Blachman, B., Tangel, D., Ball, E., Black, R., & McGraw, D. (1999). Developing phonological awareness and word recognition skills: A two-year intervention with low-income, inner-city children. *Reading and Writing: An Interdisciplinary Journal, 11*, 273–293.

Bond, C., Ross, S., Smith, L., & Nunnery, J. (1995). The effects of the Sing, Spell, Read, and Write program on reading achievement of beginning readers. *Reading Research and Instruction, 35*, 122–141.

Bryant, P., MacLean, M., Bradley, L., & Crossland, J. (1990). Rhyme and alliteration, phoneme detection and learning to read. *Developmental Psychology, 26*, 429–438.

Camilli, G., Vargas, M., & Yurecko, M. (2003). Teaching children to read: The fragile link between science and federal policy. *Education Policy Analysis Archives, 11*. Retrieved November 11, 2005, from http://epaa.asu.edu/epaa/v11n15

Chafouleas, S. M., Martens, B. K., Dobson, R. L., Weinstein, K. S. & Gardner, K. B. (2004). Fluent reading as the improvement of stimulus control: Additive effects of performance-based interventions to repeated reading on students' reading and error rates. *Journal of Behavioral Education, 13*, 67–81.

Chomsky, C. (1976). After decoding: What? *Language Arts, 53*, 288–296.

Cronbach, L. J., & Snow, R. E. (1977). What do we know about ATI? What should we learn? In L. J. Cronbach & R. E. Snow, *Aptitudes and instructional methods: A handbook for research on interactions* (pp. 492–522). New York: Irvington Press.

De la Colina, M. G., Parker, R. I., Hasbrouck, J. E., & Lara-Aleicao, R. (2001). Intensive intervention in reading fluency for at-risk beginning Spanish readers. *Bilingual Research Journal, 25*, 503–538.

Duke, N. (2000). 3.6 minutes per day: The scarcity of informational texts in grade one. *Reading Research Quarterly, 35*, 202–224.

Elliott, J., Lee, S., & Tollefson, N. (2001). A reliability and validity study of the dynamic indicators of basic early literacy skills—Modified. *School Psychology Review, 30*, 33–49.

Foorman, B. R., Francis, D. J., Davidson, K. C., Harm, M. W., & Griffin, J. (2004). Variability in text features in six grade 1 basal reading programs. *Scientific Studies of Reading, 8*, 167–197.

Greene, F. (1979). Radio reading. In C. Pennock (Ed.), *Reading comprehension at four linguistic levels* (pp. 104–107). Newark, DE: International Reading Association.

Grigg, W. S., Daane, M. C., Jin, Y., & Campbell, J. R. (2003). *The nation's report card: Reading 2002.* Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics.

Hart, B., & Risley, T. R. (1995). *Meaningful differences.* Baltimore: Paul H. Brookes.

Heckelman, R. G. (1969). A neurological impress method of reading instruction. *Academic Therapy, 4*, 277–282.

Hiebert, E. H. (2002). Standards, assessments, and text difficulty. In A. E. Farstrup & S. J. Samuels (Eds.), *What research has to say about reading instruction* (3rd ed., pp. 337–369). Newark, DE: International Reading Association.

Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing, 2*, 127–160.

Hu, C. F., & Catts, H. W. (1998). The role of phonological recoding in early reading ability: What we can learn from Chinese. *Scientific Studies of Reading, 2*, 55–80.

Jenkins, J. R., Peyton, J. A., Sanders, E. A., & Vadasy, P. F. (2004). Effects of reading decodable texts in supplemental first-grade tutoring. *Scientific Studies of Reading, 8*, 53–85.

Koskinen, P. S., & Blum, L. H. (1984). Repeated oral reading and the acquisition of fluency. In J. A. Niles & L. A. Harris (Eds.), *Changing perspectives on research and in reading/language processing and instruction: Thirty-third yearbook of the National Reading Conference* (pp. 183–187). Rochester, NY: National Reading Conference.

Kuhn, M. R., & Stahl, S. A. (2003). Fluency: A review of developmental and remedial practices. *Journal of Educational Psychology, 95*, 3–21.

LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 25*, 459–476.

Levy, B. A., Campsall, J., Browne, J., Cooper, D., Waterhouse, C., & Wilson, C. (1995). Reading fluency: Episodic integration across texts. *Journal of Experimental Psychology: Learning, Memory, & Cognition, 21*, 1169–1185.

Lonigan, C. J., Burgess, S. R., Anthony, J. L., & Barker, T. A. (1998). Development of phonological sensitivity in two- to five-year-old children. *Journal of Educational Psychology, 90*, 294–311.

Lum, T., & Morton, L. (1984). Direct instruction in spelling increases gain in spelling and reading skills. *Special Education in Canada, 58*, 41–45.

Maclay, J. H. (1971). *Reader's theatre: Toward a grammar of practice.* New York: Random House.

Massaro, D. W. (1997). *Perceiving talking faces: From speech perception to a behavioral principle.* Cambridge, MA: MIT Press.

Mathes, P. G., Torgesen, J. K., & Allor, J. H. (2001). The effects of peer-assisted literacy strategies for first grade readers with and without additional computer-assisted instruction in phonological awareness. *American Educational Research Journal, 38*, 371–410.

Morgan, A., Wilcox, B. R., & Eldredge, J. L. (2000). Effect of difficulty levels on second grade delayed readers using dyad reading. *Journal of Educational Research, 94*, 113–119.

Moustafa, M. (1997). *Beyond traditional phonics: Research discoveries and reading instruction.* Portsmouth, NH: Heinemann.

Murray, B. A. (1998). Gaining alphabetic insight: Is phoneme manipulation skill or identity knowledge causal? *Journal of Educational Psychology, 90*, 461–475.

Nagy, W., Anderson, R. C., & Herman, P. (1987). Learning word meanings from context during normal reading. *American Educational Research Journal, 24*, 237–270.

National Institute of Child Health and Human Development (NICHD). (2000). Report of the National Reading Panel. *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups* (NIH Publication No. 00-4754). Washington, DC: U.S. Government Printing Office. Retrieved November 11, 2005, from http://www.nichd.nih.gov/publications/nrp/report.htm

O'Connor, R. E., Bell, K. M., Harty, K. R., Larkin, L. K., Sackor, S. M., & Zigmond, N. (2002). Teaching reading to poor readers in the intermediate grades: A comparison of text difficulty. *Journal of Educational Psychology, 94*, 474–485.

Palinscar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction, 2*, 117–175.

Pflaum, S., Walberg, H., Karigianes, M., & Rasher, S. (1980). Reading instruction: A quantitative analysis. *Educational Researcher, 9*, 12–18.

Rasinski, T. V. (1990). Effects of repeated reading and listening-while-reading on reading fluency. *Journal of Educational Research, 83*, 147–150.

Rayner, K., & Pollatsek, A. (1989). *The psychology of reading.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Rosenshine, B., & Meister, C. (1994). Reciprocal teaching: A review of the research. *Review of Educational Research, 64*, 479–530.

Rozin, P., & Gleitman, L. R. (1977). The structure and acquisition of reading II: The reading process and the acquisition of the alphabetic principle. In A. S. Reber & D. L. Scarborough (Eds.), *Toward a psychology of reading* (pp. 55–141). Hillsdale, NJ: Lawrence Erlbaum Associates.

Samuels, S. J. (1979). The method of repeated reading. *The Reading Teacher, 32*, 403–408.

Santa, C., & Hoien, T. (1999). An assessment of Early Steps: A program for early interventions of reading problems. *Reading Research Quarterly, 34*, 54–79.

Shanahan, T. (2003). Research-based reading instruction: Myths about the National Reading Panel report. *The Reading Teacher, 56*, 646–655.

Shanahan, T. (2004). Critiques of the National Reading Panel Report: Their implications for research, policy, and practice. In P. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research.* Baltimore, MD: Paul H. Brookes Publishing.

Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children.* Washington DC: National Academy Press.

Stallings, J. (1980). Allocated academic learning time revisited, or beyond time on task. *Educational Researcher 9*(11), 11–16.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360–407.

Stevens, R. J., Madden, N. A., Slavin, R. E., & Farnish, A. M. (1987). Cooperative integrated reading and composition: Two field experiments. *Reading Research Quarterly 22*, 433–454.

Torgesen, J. K., & Mathes, P. G. (2000). *A basic guide to understanding, assessing, and teaching phonological awareness.* Austin, TX: Pro-Ed.

Torgesen, J., Wagner, R., Rashotte, C., Rose, E., Lindamood, P., Conway, T., & Garvan, C. (1999). Preventing reading failure in young children with phonological processing disabilities: Group and individual responses to instruction. *Journal of Educational Psychology, 91*, 579–593.

Venezky, R. L. (1982). The origins of the present-day chasm between adult literacy needs and school literacy instruction. *Visible Language, 16*, 113–127.

Wheldall, K., & Mettem, P. (1985). Behavioural peer tutoring: Training 16-year-old tutors to employ the "pause, prompt and praise" method with 12-year-old remedial readers. *Educational Psychology, 5*, 27–44.

Zeno, S. M., Ivens, S. H., Millard, R. T., & Duvvuri, R. (1995). *The educator's word frequency guide.* New York: Touchstone Applied Science Associates.

Appendixes

Appendix A. Tables

Table 1. Phonemic Awareness Skills

Phonemic Awareness Skill	Example of Instruction
Phoneme isolation	**Teacher:** What sound do you hear first in **cat**? **Student:** /**k**/
Auditory discrimination	**Teacher:** Which of these words doesn't belong: **bag**, **bear**, **can**? **Student: Can** doesn't belong—it doesn't begin like **bag** and **bear**. –Or– **Teacher:** What sound is the same in **jar**, **jam**, **jet**? **Student:** /**j**/
Phoneme blending	**Teacher:** What word is /**p**/ /**i**/ /**n**/? **Student:** /**p**/ /**i**/ /**n**/ is **pin**
Phoneme segmentation	**Teacher:** Break this word into its sounds: **sock**. **Student:** /**s**/ /**o**/ /**k**/ –Or– **Teacher:** How many sounds are in **tie**? **Student:** /**t**/ /**I**/ There are two sounds in **tie**.
Phoneme deletion	**Teacher:** Say **chin** without the /**ch**/ **Student: in**
Phoneme addition	**Teacher:** Add a /**s**/ to the end of **duck** **Student: Ducks** –Or– **Teacher:** Add /**b**/ to the beginning of **ring** **Student: Bring**
Phoneme substitution	**Teacher:** Change the last sound you hear in **pig** to /**n**/ **Student: Pin**

Table 2. Comparison of Synthetic and Analytic Phonics

Synthetic or Explicit Phonics	Analytic or Word Analogy Phonics
1. Teacher teaches children some simple consonant sounds (e.g., /b/, /n/, /p/, /s/).	1. Teacher teaches words (e.g., cat, pig, man, Dad).
2. Teacher teaches a vowel sound (e.g., the short /a/—the sound in *cat*).	2. Teacher then shows students how to use this word knowledge to sound out new words (e.g., can, pan, Dan): This word starts like the first sound in /c/ *cat*, and it ends like *man /an/*… It is *can*.
3. Teacher teaches children how to sound out words, and perhaps nonsense words, using these letter sounds: bab, ban, bap, bas, nab, nan, nap, nas, pab, pan, pap, sab, san, sap, sas	3. Teaching continues developing new words and understandings of the sound-symbol relationships based on known words.
4. Teaching continues letter by letter and sound by sound.	

Table 3. Summary of Phonics Content

Content of Phonics Instruction	Examples
Consonants	b, d, f, g, h, k, l, m, n, p, q, r, s, t, v, w, x, y, z
Consonant blends or clusters	bl, br, cl, cr, dr, dw, fl, fr, gl, gr, pl, pr, sc, sk, sl, sm, sn, sp, st, sw, tr, tw, scr, str
Consonant digraphs	sh, th, ch, ph, ng, gh
Short vowels	cat, bet, fit, dot, but, myth
Long vowels	ate, beat, pipe, road, use
Vowel digraphs	oo, ew, aw, au, ou, ow, oi, oy
R-influenced vowels	ar, er, ir, or
Some common spelling patterns and complex rules	Consonant-Vowel-Consonant-Silent E (CVCe), CVC, CV, CVVC, CVCCe, hard c, hard g
Silent consonants	kn, wr

Table 4. Pause-Prompt-Praise Response to Oral Reading Practice

Pause, Prompt, Praise	Directions
Pause	1. When the reader miscalls a word, pause. Wait until the next phrase ending or punctuation point. (Good readers will self-correct their miscues, so it is important to give them a chance to correct their own errors if possible.)
Prompt	2. When correcting a child there are only three possible ways to provide support; never provide more than two—in other words, if a cue doesn't lead a child to getting the word correct, just tell him or her and move on. • Guide the reader to decode more carefully (examples of appropriate decoding guidance: look at that word more carefully; what letter[s] does that begin with; sound it out; break it into syllables and sound it out.). • Guide the reader to attend to the meaning of the text more closely (any of the following are examples of appropriate comprehension guidance: Does that make sense? What does that mean? What should it say?). • Tell the student the word.
Praise	3. Praise students for success (for reading fluently, for self-correcting, for correcting words with guidance).

Table 5. Multiple Definitions of Words

Types of Definitions	Nimbly
Dictionary definition	Quick, light, and agile of movement.
Synonyms	Deftly, dexterously
Antonyms	Awkward, clumsy
Category	Way of moving
Comparison	He could move fast, but he was not nimble.
Real-life example	I nimbly climbed to the top of the tree in my back yard.
Picture or symbol	
Act it out	Here the children would demonstrate the meaning of the word using motion.

Table 6. Some Successfully Used Reading Comprehension Strategies

Single-Strategy Teaching Forms	Description
Summarization	Teaches children to reduce text to the most important information. Includes showing them how to select key information, to delete what is not important, and to replace collections of information with briefer paraphrases. Might include instruction in main ideas, selection, or invention of topic sentences. Students can sum up at the end of a text or several times along the way. One of the most powerful single strategies.
Question asking	Teaches children to guide their own recitation about a text by asking themselves questions and then trying to remember or figure out the answers. Teaching this often includes teaching students to ask different types of questions: who, what, when, where, why, how; or to focus on certain information such as main ideas. Some teachers have students ask their questions of each other. Also a powerful single strategy.
Story mapping	Teaches children that stories have a structure or organizational plan. Stories include a setting, a main character, a problem, an attempt to solve the problem, and an outcome. Having students summarizing stories in this way is effective.
Monitoring	Teaches students to pay attention to whether they understand a text. If they do not understand, then they must take action to clarify. Such clarification includes rereading, thinking about what is already known, looking at illustrations, or asking for help.
Graphic organizers	Graphic organizers are visual summaries. Students are taught to translate text into charts or graphics that show the important ideas and their interrelationships. These graphics can take the form of hierarchical trees (with general information at the top, and more specific ideas linked below), Venn diagrams (in which similarities and differences are illustrated), or many other forms.

Appendix B. Resources

Phonemic Awareness Resources

Ericson, L., & Juliebö, M. F. (1998). *The phonological awareness handbook for kindergarten and primary teachers*. Newark, DE: International Reading Association.

Opitz, M. F. (2000). Rhymes & reasons: *Literature and language play for phonological awareness*. Portsmouth, NH: Heinemann.

Yopp, H. K. (1992). Developing phonemic awareness in young children. *The Reading Teacher, 45*, 696–703.

Yopp, H. K. (1995). A test for assessing phonemic awareness in young children. *The Reading Teacher, 49*, 20–25.

Yopp, H. K. (1995). Read-aloud books for developing phonemic awareness: An annotated bibliography. *The Reading Teacher, 48*, 538–542.

Phonics Resources

Bear, D. R., Invernizzi, M., Templeton, S., & Johnston, F. (2004). *Words their way* (3rd ed.). Upper Saddle River, NJ: Prentice-HallJ.

Cunningham, P. M. (2004). *Phonics they use: Words for reading and writing* (4th ed.). New York:, Allyn & Bacon.

Lynch, J. (1998). *Easy lessons for teaching word families*. New York: Scholastic.

Moats, L. C. (2000). *Speech to print: Language essentials for teachers*. Baltimore: Brookes Publishing.

Oral Reading Fluency Resources

Blevins, W. (2001). *Building fluency: Lessons and strategies for reading success*. New York: Scholastic.

Johns, J. L., & Berglund, R. L. (2002). *Fluency*. Dubuque, IA: Kendall-Hunt.

Opitz, M. F., & Rasinksi, T. V. (1998). *Good-bye round robin: 25 effective oral reading strategies*. Portsmouth, NH: Heinemann.

Osborn, J., Lehr, F., & Hiebert, E. H. (2003). *A focus on fluency*. Honolulu, HA: Pacific Resources for Education and Learning.

Rasinski, T. V. (2003). *The fluent reader*. New York: Scholastic.

Vocabulary Resources

Allen, J. (1999). *Words, words, words: Teaching vocabulary in grades 4–12*. Portland, MN: Stenhouse.

Blachowicz, C., & Fisher, P. (2001). *Teaching vocabulary in all classrooms* (2nd ed.). Upper Saddle River, NJ: Prentice-Hall.

Johnson, D. D. (2001). *Vocabulary in the elementary and middle school*. Boston: Allyn & Bacon.

Nagy, W. E. (1988). *Teaching vocabulary to improve reading comprehension*. Newark, DE: International Reading Association.

Stahl, S. (1998). *Vocabulary development*. Cambridge, MA: Brookline Books.

Reading Comprehension Resources

Blachowicz, C., & Ogle, D. (2001). *Reading comprehension: Strategies for independent learners*. New York: The Guilford Press.

Block, C. C., Gambrell, L. B., & Pressley, M. (Eds). (2002). *Improving comprehension instruction: Rethinking research, theory, and classroom practice*. San Francisco: Jossey Bass.

Harvey, S., & Goudvis, A. (2000). *Strategies that work: Teaching comprehension to enhance understanding*. Portland, MN: Stenhouse.

Naperville > Chicago > Washington, D.C.

908_12/05