Introduction to the
Reading Research Notes

The *Reading Research Notes* are a synopsis of the findings of two major reports of reading research reviews. Our purpose in presenting the *Reading Research Notes* is to provide workshop participants with easy-to-understand definitions, major research findings, and implications for instruction based on the research reports. The *Reading Research Notes* for each reading element (word analysis/alphabetics, fluency, vocabulary, and comprehension) have been reviewed in detail by reading experts familiar with the major reviews of reading research.

The review of research related to providing reading instruction to children, *Teaching Children to Read* (National Reading Panel, 2000), came first. The National Reading Panel (NRP), sponsored by the National Institute of Child Health and Human Development, undertook an analysis of research into alphabetics (phonemic awareness and phonics), fluency, vocabulary, and comprehension, teacher education, and computer technology. The panel reviewed experimental or quasi-experimental research published in refereed journals. Studies considered had to include descriptions of

participants, interventions, data analysis methods, and outcome measures.

The review of adult basic education reading research was conducted by the Reading Research Working Group (RRWG), a group convened by the National Institute for Literacy and the National Center for the Study of Adult Learning and Literacy. The RRWG used criteria similar to the NRP but broadened the scope of research reviewed to include qualitative studies. (See the box below for an overview of the criteria used to select studies for review.)

The final report of the RRWG, *Research-Based Principles for Adult Basic Education Reading Instruction* (Kruidenier, 2002), was sponsored by the Partnership for Reading, National Institute for Literacy. It presents findings in the areas of reading assessment, alphabetics, fluency, vocabulary, comprehension, and computer technology. Each set of findings is further grouped into the following categories:

- *Principles* are the strongest statements made about ABE reading instruction. They are based on findings

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*Studies selected for review by the RRWG had to meet the following criteria:

1. A study must focus on the reading development of low-literate adults 16 years and older who are no longer served in a secondary education program.
2. A study must include reading as an outcome measure (includes reading isolated words or pseudowords, oral and silent reading, and comprehending words or connected text read either orally or silently).
3. Studies published in refereed (peer-reviewed) journals were given

the highest priority, though five non-journal reports were included.
4. A study must contain a full description of outcome measures.
5. A study must contain careful and complete descriptions of the adults participating (age, demographic, cognitive, academic, and behavioral characteristics) and must contain enough information to make judgments related to validity.
6. Any interventions (and assessment procedures) used in a study must

be described in sufficient detail to enable the study to be replicated.
7. Results from intervention studies using experimental or quasi-experimental design were given highest priority.
8. Results from qualitative studies must be based on a sound analytical framework.
9. Results from correlational and other non-experimental studies were considered to be appropriate for issues related to assessment.

*Adapted from Kruidenier, 2002, pp. 14-15.

from two or more experimental studies and any number of non-experimental studies.

- *Trends* are based on fewer than two experimental studies.
- *Ideas* are based on a thorough review of reading instruction research at the K-12 level and help fill in gaps in the ABE reading research.
- *Comments* are less conclusive findings from K-12 research.

The *Reading Research Notes* summarize the findings from the two reports around four key reading instructional elements: alphabetics, fluency, vocabulary, and comprehension. Each *Reading Research Note* defines terms, describes the importance of including the element in reading instruction, and provides an overview of how assessment is typically conducted. Each note also lists research-based instructional practices for adult students, based on the *Principles* discussed in the RRWG report and their corresponding *Practices* described on a companion website at http://www.nifl.gov/partnershipforreading/ adult_reading/adult_reading.html.

The final section includes research-based instructional practices which the NRP (2000) found to be effective with children in grades K-12. These may be used to support the findings for adult instruction and, in some cases, act as place holders where there are gaps in the adult research.

The *Reading Research Notes* are a "thumbnail" look at the two reports. They are intended to give users an overview, not to supplant the reports.

Sources

Kruidenier, John (2002). *Research-Based Principles for Adult Basic Education Reading Instruction.* Washington, DC: National Institute for Literacy, Partnership for Reading.
http://www.nifl.gov/partnershipforreading/ adult_reading/adult_reading.html

National Reading Panel (2000). *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).* Washington, D.C.: National Institute of Child Health and Human Development.

Alphabetics and Word Analysis

What are Alphabetics and Word Analysis?

Kruidenier (2002) defines alphabetics as "the whole process of using the letters in a written alphabet to represent meaningful, spoken words" (p. 35). In some cases there are one-to-one correspondences between sounds and individual letters. In others, there is a correspondence between patterns of letters and sounds.

According to the NRP (2000), alphabetics includes both phonemic awareness and phonics understandings.

- *Phonemic awareness* is the ability to distinguish and manipulate the individual sounds—phonemes—in spoken language. Although the English alphabet contains only 26 letters, the letters can be used to represent approximately 41 phonemes. Phonemic awareness is a subcategory of phonological awareness, which refers also to the ability to identify and manipulate the larger parts of spoken language, such as words, syllables, and rhymes.

- *Phonics* refers to the relationship between the letters of written language and the sounds of spoken language. It is different from phonemic awareness because it involves the letters themselves and how these relate to the sounds of the language.

In addition to phonemic awareness and phonics, Kruidenier (2002) asserts the importance of word analysis in reading instruction, especially for more advanced readers.

- *Word analysis* refers to all the methods that readers use to recognize words, including the application of phonics skills; sight recognition; use of context; knowledge of prefixes, suffixes, and root words; and looking up words in the dictionary.

Why Should Alphabetics and Word Analysis Be Taught?

According to the two research reports, knowledge and skill with alphabetics facilitate word reading, which is one contributor to text comprehension. Research with children has found that phonemic awareness and knowledge of letters are the two best indicators of how well children will read by the end of first grade. However, beginning adult readers exhibit minimal phonemic awareness and have difficulty applying letter-sound knowledge to figure out new words while reading. The research shows that these skills can improve with effective instruction.

The effect of improved phonemic awareness, phonics, and other word analysis skills on text comprehension of adults has not been fully researched, but the NRP found that effective instruction in phonemic awareness and phonics with children leads to improved reading comprehension for at-risk kindergartners and first-graders at all socio-economic levels, and for disabled readers in Grades 2-6. Kruidenier (2002) maintains that additional skills, such as attending to prefixes, suffixes, and root words and skills in using the dictionary as a tool, are important as adult readers become more advanced. Although there seems to be a case for teaching alphabetics and word analysis in ABE classrooms, both reports strongly recommend that such instruction be accompanied by instruction in other areas related to reading, such as fluency, vocabulary, and development of comprehension strategies.

How Are Alphabetics and Word Analysis Typically Assessed?

Phonemic awareness (PA) assessments are oral in nature and are administered one-on-one. They usually require the individual to identify and/or manipulate (add, delete, move, replace, or segment) phonemes in individual words. For instance, a task might be "Tell me the first sound in *paste*" (/p/) or "What is *smile* without the /s/?" (*mile*) (NRP, 2000, p. 2-10).

- Kruidenier (2002) cautions that adults with learning disabilities in reading may not develop phonemic awareness as they learn to read and may have difficulty with strictly oral phonemic awareness tasks. Thus, attending to phonemic awareness development may

help identify those students who need more in-depth work with phonemic awareness or who need instruction that bypasses strictly oral phonemic awareness instruction by combining phonemic awareness with phonics instruction.

Assessments of phonics and word analysis usually require the individual to pronounce letters, word parts, or whole words which are decodable using common rules or generalizations. Nonsense words are sometimes used in order to ensure that the reader does not know the words as sight words and, thus, will need to apply phonics skills. Sight vocabulary, or the range of words that are recognized "on sight," is typically assessed using leveled lists of regularly and irregularly spelled words.

Research-Based Instructional Practices:
■ ADULTS (Kruidenier, 2002)

• Assess beginning readers' phonemic awareness, phonics abilities, and sight word knowledge. Since adult beginning readers are generally better at recognizing familiar sight words than children who are learning to read, avoid using sight words adults may already know for phonics assessments. Continue to assess phonemic awareness in beginning readers, even if their overall reading scores are going up.

• Provide adult beginning readers with explicit instruction in word analysis in conjunction with other aspects of reading.

Research-Based Instructional Practices:
■ K-12 CHILDREN (NRP, 2000)
Phonemic Awareness

• Teach children to manipulate phonemes with letters.

• Focus instruction on 1-2 types of phoneme manipulation, instead of on multiple types. Segmenting and blending seem to be the most important manipulations to teach.

• Teach phonemic awareness in small groups.

• Be explicit about the connection between phonemic awareness and reading.

• Monitor phonemic awareness learning carefully. Assess students who do not respond to phonemic awareness instruction for possible reading disabilities.

Phonics

• Use some form of systematic phonics instruction. Teach a carefully selected and useful set of letter-sound relationships, organized into a logical instructional sequence. (It does not seem to matter whether or not the approach asks readers to turn letters into sounds, use analogies, or notice spelling patterns.)

• Encourage readers to apply their phonics knowledge while reading connected text and writing.

• Provide instruction in the other essential elements (phonemic awareness, fluency, vocabulary, text comprehension).

• Begin phonics instruction in kindergarten or first grade and continue for about 2 years.

Sources

Kruidenier, John (2002). *Research-Based Principles for Adult Basic Education Reading Instruction.* Washington, DC: National Institute for Literacy, Partnership for Reading.
http://www.nifl.gov/partnershipforreading/
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National Reading Panel (2000). *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).* Washington, D.C.: National Institute of Child Health and Human Development.

Fluency

What is Fluency?

Fluency is the ability to read easily and accurately, with appropriate rhythm, intonation, and expression. Fluency includes the ability to decode rapidly, grouping words into meaningful units for interpretation. It also includes attending to punctuation, determining emphasis, and pausing appropriately in order to make sense of what is being read.

Why Should Fluency Be Taught?

According to the two research reports, fluent reading aids a reader's ability to comprehend text. Two major cognitive demands face readers: decoding (recognizing words) and comprehending. Individuals who must expend great effort in decoding have fewer cognitive resources to devote to understanding the meaning of text. Research with adults suggests as well that fluency is an issue for adult beginning readers, intermediate and even some advanced readers. There are large differences in reading rate between adults with good and poor reading fluency, and adult beginning readers' fluency is similar to the fluency of children who are beginning readers. For ABE students and children, fluency instruction and practice may lead to increases in reading achievement.

How Is Fluency Typically Assessed?

The most common fluency assessments measure the accuracy of word recognition and the rate of the reading during oral reading. Reading rate can also be measured by having a reader read silently. As an alternative to assessments based on word accuracy and/or reading rate, the National Assessment of Educational Progress fluency study utilized a pausing scale, assigning one point for word-by-word reading and up to four points for meaningful pausing only. Fluency assessments may be standardized or informal.

Research-Based Instructional Practices:
■ ADULTS (Kruidenier, 2002)

• Assess fluency to determine whether fluency instruction is needed. CAUTION: Be aware that assessing oral reading accuracy in adults for whom English is a second language may be complicated by interference from their first language.

• Use approaches that include repeated reading of passages of text, words from texts, and other text units. Some repeated reading approaches that had positive results include:
— Practicing with a taped version of a passage that is one grade-equivalent level above the student's reading comprehension score on the TABE
— Practicing isolated words from a passage and then reading the passage repeatedly until fluency is attained
— Re-reading a student's own dictated story until fluent reading of the story is achieved

Research-Based Practices for Instruction:
■ K-12 CHILDREN (NRP, 2000)

• Provide opportunities for readers to read passages orally multiple times with guidance and feedback from teachers, peers, or parents.

• Use systematic rather than incidental phonics instruction to improve beginning readers' fluency.

Sources

Kruidenier, John (2002). *Research-Based Principles for Adult Basic Education Reading Instruction.* Washington, DC: National Institute for Literacy, Partnership for Reading.
http://www.nifl.gov/partnershipforreading/adult_reading/adult_reading.html

National Reading Panel (2000). *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).* Washington, D.C.: National Institute of Child Health and Human Development.

Vocabulary

What is Vocabulary?

Vocabulary refers to those words for which a person knows the meanings. Individuals have several types of vocabularies.

- **Receptive vocabulary** refers to the words an individual understands when presented with the words, either orally or in text.

- **Productive vocabulary** designates those words the individual can actually use in writing or speaking.

- **Oral vocabulary** refers to words used or recognized in speaking or listening.

- **Reading vocabulary** refers to words the individual recognizes when they are presented in a print form.

Why Should Vocabulary Be Taught?

According to the two research reports, reading vocabulary is crucial to the comprehension processes of a skilled reader. Without knowledge of key vocabulary, readers may struggle with the writer's intended meaning. For beginning readers, words encountered in text are mapped onto oral vocabulary, so benefits of using letter-sound correspondences to recognize words come about only if the words are in the reader's oral vocabulary. In general, the greater the oral and reading vocabularies of the reader, the more likely it is that the reader will be able to read text with understanding.

Kruidenier (2002) cautions that practitioners should not assume that adult students, because they are older and more experienced, have well-developed vocabularies. He explains that, "Although their life experience may give them an advantage on vocabulary knowledge at lower reading levels, this advantage may disappear at higher reading levels" (p. 68). Since much of one's reading vocabulary is learned from the act of reading itself, an adult student with limited reading experience may also have a much more limited vocabulary than might be otherwise expected.

How Is Vocabulary Typically Assessed?

Vocabulary is difficult to assess, and any assessment is at best an estimate of the individual's total vocabulary (NRP, 2000, pp. 4-16). Assessments may be standardized, to measure general vocabulary, or teacher-developed, to measure specific terms taught in class. Vocabulary assessments often ask readers to read a word and then choose its meaning from options provided. However, a reader with word recognition difficulties may have trouble reading the words on the page. Kruidenier (2002) suggests that, for this reason, oral vocabulary assessments may provide more valid information about the meanings readers attribute to words. Oral assessments may be similar in format to multiple choice reading assessments or may involve asking individuals to define terms using their own words.

Research-Based Instructional Practices:
■ ADULTS (Kruidenier, 2002)

The review of research on vocabulary instruction for adults was not able to pinpoint specific instructional practices that are more effective than others. However, there is some evidence to suggest the following:

- Teach vocabulary in specific contexts, such as a family or workplace literacy settings.

Research-Based Instructional Practices:
■ K-12 CHILDREN (NRP, 2000)

- Provide opportunities for learners to learn new words in rich contexts.

- Teach vocabulary both directly and indirectly.

- Teach words that are appropriate for learners' age and ability levels.

- Teach vocabulary directly in ways that actively engage learners. Introducing words before reading texts has been found to be effective.

• Expose learners to words through read-alouds, discussion, and independent reading (in material they can read fluently). Vocabulary can be learned incidentally.

• Provide opportunities for repetition and multiple exposures to new words.

• Explore computers as a way to teach vocabulary.

• Use a variety of instructional methods for teaching vocabulary.

Sources

Kruidenier, John (2002). *Research-Based Principles for Adult Basic Education Reading Instruction.* Washington, DC: National Institute for Literacy, Partnership for Reading.
http://www.nifl.gov/partnershipforreading/
adult_reading/adult_reading.html

National Reading Panel (2000). *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).* Washington, D.C.: National Institute of Child Health and Human Development.

Reading Comprehension

What is Reading Comprehension?

The NRP (2000) defines reading comprehension as "the construction of the meaning of a written text" (p. 4-39). Reading comprehension results from a dynamic interaction of the words of the text at hand, the reader's purposes for reading, the reader's own prior knowledge of the world, language, and print, and the comprehension strategies which the reader knows and employs to support understanding.

• Comprehension strategies are specific procedures that readers use to understand more fully what they are reading (NRP, 2000, p. 4-40).

Why Should Reading Comprehension Be Taught?

According to Kruidenier (2002) and the NRP (2000), skilled readers are purposeful and active, applying comprehension strategies as they strive to construct meaning. Many adult developing readers, however, are not even aware that strategies exist and are not likely to develop them without instruction. Furthermore, Kruidenier (2002) reports that, while they may be able to perform simple comprehension tasks (such as recalling simple ideas and locating single pieces of information in text), adults who qualify for Adult Basic Education (ABE) classes often are unable to integrate and synthesize information from longer or more complex texts. In particular, adults for whom English is a second language and those with learning disabilities (two principal groups served in ABE classes), may have lower functional reading comprehension achievement in English. Both synthesis reports conclude that teaching comprehension strategies is effective in enhancing reading comprehension and should be an integral part of reading instruction.

How Is Reading Comprehension Typically Assessed?

Kruidenier (2002) explains that assessment can involve either assessing the readers' ability to understand text or assessing their use of comprehension strategies. In assessments of their ability to understand text, readers usually read passages and answer questions, typically in a multiple choice or short answer format. Other assessment tasks include completing cloze passages and summarizing what was read. In assessments of their use of comprehension strategies, readers' may be observed or asked to tell what strategies they used. Assessments can also be divided into formal, standardized assessments or more informal assessments, including teacher-designed tests. Since reading comprehension tests vary widely in their reliability, Kruidenier (2002) suggests using multiple assessments for diagnostic and program evaluation purposes.

Research-Based Instructional Practices:
■ ADULTS (Kruidenier, 2002)

• Assess learners to determine reading comprehension ability and to measure progress in the development of reading comprehension strategies. Also consider secondary issues that may impact reading comprehension, such as cultural and language differences in ESL students; learning disabilities; alphabetics and vocabulary knowledge; and fluency.
  — Use more than one measure of reading comprehension to obtain useful information about factors affecting students' reading comprehension.

• Provide explicit instruction in reading comprehension strategies, such as:
  — Using headings
  — Summarizing verbally
  — Monitoring comprehension
  — Self-questioning
  — Skimming

• Provide instruction in comprehension along with instruction in word analysis, fluency, and vocabulary.

• Explore computer-assisted instruction to improve reading comprehension.

Research-Based Instructional Practices:
■ K-12 CHILDREN (NRP, 2000)
• Provide explicit instruction and practice in the following:
 — question generating
 — question answering
 — comprehension monitoring
 — graphic and semantic organizers
 — story structure
 — summarizing
 — multiple strategy instruction

• Engage learners in cooperative learning, in which learners instruct or interact with each other to learn text comprehension strategies.

• Provide tasks that demand active involvement.

• Scaffold new learning, gradually withdrawing the amount of assistance offered to the learner. Include:
 — Direct explanation
 — Modeling
 — Guided practice
 — Application

• Encourage and teach students to use comprehension strategies flexibly and in combination.

Sources

Kruidenier, John (2002). *Research-Based Principles for Adult Basic Education Reading Instruction.* Washington, DC: National Institute for Literacy, Partnership for Reading.
http://www.nifl.gov/partnershipforreading/adult_reading/adult_reading.html

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