Linking recommendations from psycho-educational reports to curriculum outcomes for the Atlantic Provinces: Examining evidence-based practices in reading instruction.

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Abstract

This thesis examined evidence-based practices in instruction for students struggling to acquire reading skills. These practices were then used to formulate recommendations which relate to the Atlantic Canada English language arts curriculum outcomes. The two main purposes for this thesis were to better inform school psychologists and teachers about evidence-based practices in reading instruction for students who struggle with reading; and to relate psycho-educational recommendations to the curriculum outcomes provided in the Atlantic Canada English Language Arts Curriculum, both in the Elementary K-3 (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998) and Grades 4-6 (e.g., Nova Scotia Department of Education and Culture, 1998) documents.

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Introduction

This thesis linked evidence-based practices in reading instruction for students who struggle to acquire reading skills with the Atlantic Canada English language arts curriculum outcomes. There were two main purposes for this thesis: to provide a resource to school psychologists and teachers addressing evidence-based practices in reading instruction for struggling readers; and to relate evidence-based psycho-educational recommendations in reading to the curriculum outcomes provided in the Atlantic Canada English language arts curriculum, both in the Elementary K-3 (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998) and Grades 4-6 (e.g., Nova Scotia Department of Education and Culture, 1998) documents.

Knowledge of evidence-based practices can improve the strategies included in the recommendations of school psychologists and help teachers implement evidence-based strategies in the classroom. In this thesis, evidence-based strategies are incorporated into recommendations for reading instruction and then linked to the reading components of the Atlantic Canada English language arts curriculum. It is hoped that this link will help make the recommendations for reading instruction more meaningful to the individuals who use them, in addition to facilitating collaboration between teachers and school psychologists. A brief review of the research, evidence-based recommendations, and the related curriculum outcomes are presented in the form of a booklet, which summarizes this information into a resourceful document for school psychologists and teachers.

Evidence-Based Practices

Evidence-based practice refers to the use of intervention strategies and procedures that have been rigorously studied and for which there is adequate scientific evidence supporting their effectiveness with a specified population (Justice and Pullen, 2003; Logemann, 2000). The term evidence-based practices is used interchangeably in the literature with the term empirically validated practices. Shinn and McConnell (1994) suggested that the use of empirically validated instructional strategies in the classroom can improve the learning of significantly more students than the current set of remediation programs. Logemann (2000) argued that the use of procedures for which evidence is questionable or not yet established puts teachers at risk for slowing students' progress in a time that is essential to their development and learning.

Although there is a movement in the field of psychology toward using empirically validated techniques (e.g., Levant, 2004), it has been suggested that teachers and school psychologists may not always refer to such when making decisions about students, as there can be a tendency to rely exclusively on one's personal practice, apart from integrating personal knowledge and research (Justice and Pullen, 2003). For example, in an examination of recommendations made in the area of reading by school psychology students at the Master's level, Crofts (2007) found that a considerable proportion of the psycho-educational reports did not recommend evidence-based practices.

Studies have concluded that translating evidence-based practices into actual use in schools has been an area of limited success (Gersten, Vaughn, Deshler, & Schiller, 1997; Vaughn, Klingner, & Hughes, 2000). Involved in this process is the need to increase awareness and use of evidence-based practices, and, more difficult, finding a way to maintain the sustained use of these practices. Malouf and Schiller (1995) suggested three factors that need to be considered in the

application of research-based practices: (1) increasing teacher knowledge by building on their existing knowledge base; (2) understanding teachers' attitudes toward research and the manner in which it affects their teaching; and (3) understanding how the demands of the local context will affect implementation. The current thesis addresses the first and third factors suggested by Malouf and Schiller (1995) by making these research-based practices more relevant through integration with curriculum outcome documents.

To ensure that the interventions delivered to students improve their reading skills, school psychologists and teachers should incorporate evidence-based practices. This thesis examined evidence-based interventions for students who are struggling in the area of reading. Interventions described in this thesis have been examined in the research literature and were only included if adequate evidence has been found demonstrating their effectiveness in improving the reading skills of students struggling with reading.

Reading

Approaches to reading instruction often differ due to the variations in the definition of reading. The Atlantic Canada English language arts curriculum (Nova Scotia Department of Education and Culture, 1998) defines reading as a meaning-making, problem-solving process in which the reader interprets or constructs meaning from text by applying language knowledge, meaning-making strategies, and personal experiences. Literacy research supports this comprehensive definition of reading. For example, reading has been defined as intentional thinking during which meaning is constructed through interactions between text and reader (e.g., Durkin, 1993). The content of meaning is influenced by the text and by the reader's prior knowledge that is brought to bear on it (Anderson & Pearson, 1984).

This thesis examined two primary components of reading, word recognition and reading comprehension. To become a skilled reader, the student must be able to perform both of these processes simultaneously. Research indicates that different skill levels in word recognition and comprehension account for a large proportion of the variance in reading ability in school-age children (e.g., Catts, 1993; Catts, Adolf, & Weismen, 2006; Curtis, 1980; Gough & Tunmer, 1986; Hoover & Gough, 1990). Within this framework, reading difficulties are indicated by word recognition problems, reading comprehension problems, or a combination of the two components.

There is much debate concerning how best to instruct students to learn to read. In a classic book on early reading instruction, Adams (1990) referred to the question of how to best teach beginning reading as the most politicized topic in the field of education. After reviewing more than 100,000 studies, findings of the National Reading Panel (National Reading Panel, 2000) found that to become good readers, students require instruction and mastery in the five essential components of reading: phonemic awareness (the ability to distinguish the individual sounds that make up spoken language); phonics skills (knowledge of the sounds that letters and letter combinations make and how to sound out words); fluency; vocabulary development; and reading comprehension strategies.

Word Recognition

Research indicates that the majority of students who struggle with reading have considerable difficulty with word recognition skills (e.g., Share & Stanovich, 1995). Word recognition (also known as word decoding) is defined as the ability to read and understand printed words (Hoover & Gough, 1990). Word recognition has been found to have a prominent role in reading instruction in the early elementary grades (Sweet & Snow, 2003).

Research has shown that word recognition problems are primarily caused by deficits in phonological processing (e.g., Dufva, Niemi, & Voeten, 2001; Share & Stanovich, 1995; Siegel, 1993; Stanovich, 1988). Phonological processing involves using phonological information (i.e., the sounds of one's language) in processing written and oral language (Wagner & Torgesen, 1987). One of the most researched components of phonological processing that has been shown to be deficient in reading disabled students is phonological awareness and phonological awareness plays a crucial role in learning to read (for review, see Snow, Burns, & Griffin, 1998). It involves the ability to identify and manipulate parts of spoken language, such as syllables, onsets and rimes, and phonemes.

There are several lines of research which demonstrate the critical role of phonological awareness in learning to read. Phonological awareness is one of the best predictors of success in reading acquisition (for review, see Adams, 1990) and possession of phonological awareness skills in the early elementary years is associated with successful reading acquisition in later elementary grades (e.g., Juel, 1988; Torgesen, Wagner, Rashotte, Burgess & Hecht, 1997; Wagner, Torgesen & Rashotte, 1994). Juel (1988) found that the probability that a first grade student who struggled with word recognition and phonological awareness would remain a poor reader at the end of fourth grade was .88. Research has shown that the difficulties experienced by students struggling to acquire reading skills are often due to deficits in phonological awareness (e.g., Blachman, Tangel, Ball, Black, & McGraw, 1999; Cornwall, 1992; Felton, 1993; National Reading Panel, 2000). In addition, research has shown that training in the area of phonological awareness for students struggling with reading has a beneficial impact on their later reading (e.g., Parkinson & Gorrie, 1995).

Phonemic awareness is a subcategory of phonological awareness. It has been indicated as being the most sophisticated level of phonological awareness and the most important for learning to read (e.g., Lane, Pullen, Eisele, & Jordan, 2002). Phonemic awareness refers to the ability to isolate and manipulate phonemes, which are the smallest individual sounds in spoken words. For example, the word "chirp" has three sounds, or phonemes. In the English language there are between 40 and 44 distinct sounds. Successful instruction in phonemic awareness is most effective when it focuses on both phoneme segmentation and blending (Vaughn & Linan-Thompson, 2004). An example of phoneme blending would be to have students listen to a sequence of phonemes and combine them to form a word (i.e., the sounds /r/ /a/ /n/ make the word ran). An example of phoneme segmentation is having students break a word into its separate sounds, saying each individual phoneme (i.e., the word *fast* is made up of the sounds /f/ /a/ /s/ /t/). Phonemic awareness instruction helps all students acquire word recognition skills, including normally developing readers, children at risk for future reading problems, and students with reading disabilities (National Reading Panel, 2000).

Phonics instruction is another component of effective reading instruction. Phonics teaches the relationships between the letters of written language (graphemes) and the individual sounds of spoken language (phonemes) and how these relationships are used to read and write words. There are 26 letters in the alphabet which are used to symbolize between 40 and 44 speech sounds in English (e.g., Vaughn & Linan-Thompson, 2004). There are different instructional approaches to phonics, including synthetic phonics and analytic phonics. Synthetic (or explicit) phonics programs teach students to convert letters into sounds and then blend the sounds to form recognizable words. Jolly Phonics, Lindamood Phonemic Sequencing (LiPS) program (formerly called the ADD program, Auditory Discrimination in Depth), the Lippincott

program, Open Court, Orton Gillingham, Reading Mastery (also known as Direct Instruction or DISTAR) and Sing Spell Read & Write are all synthetic programs which are used in schools (National Reading Panel, 2000). In contrast, analytic (or implicit) phonics programs teach students to analyze letter-sound relationships in previously learned words to detect phonetic and orthographic patterns. In comparing synthetic and analytic phonics for students with reading disabilities, studies have found that students who received synthetic phonics scored higher on measures of phonemic awareness and word recognition (e.g., Foorman, Francis, Winikates, Mehta, Schatschneider, & Fletcher, 1997).

Sight word recognition refers to words that readers recognize automatically. In other words, readers do not need to apply sounding out strategies to read these words. A goal of reading instruction is to build up a reader's sight word vocabulary. Words that often appear in students' readings become sight words most readily. The number of words that students who struggle with reading can recognize fluently and easily is usually quite limited (e.g., Manis, Custodio, & Szeszulski, 1993). Studies of word recognition instruction often incorporate sight word instruction into their word recognition programs as a necessary component to improve reading for disabled readers (e.g., Gaskins, Downer, & Anderson, 1988; Lovett et al., 2000; Vellutino et al., 1996). Effective sight word instruction for students who struggle with reading involves the introduction of words in groups, which are taught to mastery each week and followed by activities, repeated readings, and sentence reading practice with the sight words (e.g., Bryant, Fayne, & Gettinger, 1982; Lovett et al., 2000; Vellutino et al., 1996).

Higher-level word identification strategies have been shown to help facilitate the decoding of unfamiliar words, especially for older children with reading disabilities. Higher-level word identification strategies are individually taught and practiced, with the explicit goal of

helping disabled readers use what they do know to aid them in decoding unfamiliar words (e.g., Lovett, Lacerenza, & Borden, 2000). Effective application of these strategies depends in part on the students' acquisition of high frequency sight words (Lovett, Lacerenza, & Borden, 2000).

Numerous studies have demonstrated that word recognition and phonological awareness can be strengthened in several ways: (a) direct training in phonological awareness skills (e.g., Felton & Pepper, 1995; Martin, Claydon, Morton, & Binns, 2003); (b) increasing knowledge of, and facility with, letter-sound correspondences and with sounding out and blending strategies for word recognition (e.g., Byrne & Fielding-Barnsley, 1989; Foorman, 1995; Lovett, Warren-Chaplin, Ransby, & Borden, 1990); and (c) higher-level strategies for working out unknown, complex words (e.g., Gaskins, Downer, & Anderson, 1988, Lovett, Lacerenza, & Borden, 2000).

Instructional Methods for Word Recognition

A significant body of research exists which demonstrates the type of instruction that is necessary to improve the word recognition skills of students who struggle to acquire reading skills (e.g., Blachman et al., 2004; National Reading Panel, 2000; Torgesen, Wagner, Rashotte, et al., 1999). Research studies examining word recognition strategies have overwhelmingly found that instruction for students who are struggling with reading must be even more explicit and systematic than instruction required by the majority of children.

Explicit instruction refers to how thoroughly the teacher is directly explaining, modeling, and guiding student learning. The term explicit instruction is used interchangeably in the literature with the term direct instruction. Major components of explicit instruction include teaching in small steps, guiding students during initial practice, and providing students with high levels of successful practice (Simmons, Fuchs, Fuchs, Mathes, & Hodge, 1995). This method of delivery can be used with one student, with small groups, or entire classrooms. Systematic

instruction is defined as "a teaching method that clearly identifies a carefully selected and useful set of relationships and then organizes the introduction of these relationships into a logical instructional sequence" (Partnership for Reading, 2003, p.16). Systematic instruction involves activities and lessons which are planned out over the entire content domain and provides students with ample opportunities to practice applying the knowledge of the relationships they have learned.

Instruction using explicit and systematic instruction has been supported in academic literature. Dramatic reductions in the incidence of word recognition difficulties have been demonstrated when explicit and systematic instruction in phonemic awareness and phonics is provided by the classroom teacher in the early grades (e.g., Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998). It is also known that explicit and systematic phonics instruction produces significant benefits for students from kindergarten through the early elementary grades and for students who struggle with reading (National Reading Panel, 2000).

To address the needs of students struggling to learn to read, not only should instruction be more explicit, comprehensive, and intensive, but it should also be more supportive in small-group or one-on-one formats (e.g., Foorman & Torgesen, 2001). In comparing small group and one-on-one instruction, Elbaum and colleagues (1999) found that small group interventions were as effective as one-on-one instruction. Rashotte, MacPhee, & Torgesen (2001) found that small group reading instruction was more beneficial for students with reading disabilities in first through sixth grades, rather than one-to-one or whole class instruction. Wise, Ring, & Olson (1999) also found that small group reading instruction on computers was beneficial for students who struggle with acquiring skill at reading.

In investigating the effective sizes of small groups, Lauren and Allen (1999) found that small-group instruction consisting of 2 to 4 students was most helpful for students who struggle with reading to improve their literacy skills. To make small group instruction efficient and effective, student groupings should be re-formed as students achieve at different rates, in order to target instruction at different levels (Walpole, Justice, & Invernizzi, 2004). The benefits of small group instruction extend beyond students with reading disabilities to the whole classroom. Research evidence has shown that small group instruction can meet the literacy needs of all children (e.g., Foorman & Torgesen, 2001).

While there are many commercial programs that are explicit and systematic, such as the Jolly Phonics (Lloyd, 1997) and Explode the Code (Hall & Price, 1984) programs, this thesis examined the research that led to the development of such commercial programs. It is believed that knowledge of the fundamental components of reading instruction will enable teachers to evaluate and select the best commercial programs.

Maureen Lovett and her colleagues have developed effective programs of reading instruction for students with reading disabilities that are both explicit and systematic (e.g., Lovett, Borden, DeLuca, Lacerenza, Benson, & Brackstone, 1994; Lovett, Lacerenza, Borden, Frijters, Steinbach, & De Palma, 2000; Lovett & Steinbach, 1997; Lovett, Steinbach, and Frijters, 2000). The two evidence-based remedial reading programs that come from this research group are the Phonological Analysis and Blending/Direct Instruction program (PHAB/DI) and Word Identification Strategy Training program (WIST). PHAB/DI incorporates explicit and systematic instruction to address two component skills: phonemic awareness and phonological blending and segmenting. In this program, students are initially taught to segment and blend words orally and then in the context of print, through direct teaching of letter-sound and letter cluster-sound

correspondences. Phoneme segmentation is then taught by training the student to sound out words slowly, emphasizing letter-sound and letter cluster-sound correspondences. Blending training teaches the student how to combine individual sounds to form words. Rhyming is used to facilitate blending of stop consonants (e.g., c-at, p-at, d-ear, g-ear) and to facilitate generalization and transfer during word recognition learning. Mnemonic aids are also provided for students in terms of visual cues to support initial learning, such as symbols over long vowels, letter-size variation, and connected letters.

The WIST program teaches students how to use four metacognitive strategies to use subparts of words they know to decode larger, unknown words. These strategies are individually taught and practiced, along with the specific skills required to implement the strategies successfully. For the first strategy, Word Identification By Analogy, students learn to compare an unfamiliar word to a word they already know. For the second strategy, Vowel Variation Pronunciations, students are taught that individual vowels and vowel combinations have multiple pronunciations, which is often determined by the letters surrounding the vowel. In the third strategy, Seek the Part of the Word You Know, the student is taught to look for small words or word parts that he or she does know when approaching an unfamiliar word. Finally, for the fourth strategy, Peeling Off, students are instructed to identify and segment affixes at the beginning and end of words, reducing the unfamiliar word to a smaller, more manageable root word. At the onset of the program, students learn a set of 120 key words which have high frequency spelling patterns, at a rate of five words per day (e.g., Lovett, Lacerenza, & Borden, 2000). Metacognitive mnemonics are taught to help students acquire a set of general routines important to effective strategy application and evaluation. For example, in the SAME (Select, Apply, Monitor, Evaluate) Plan, the student is required to: a) monitor his or her progress to see if a particular

strategy is working; b) switch to another strategy if the strategy being used is ineffective; c) exercise flexibility when looking for alternative strategies; and d) be persistent in trying strategies until success is achieved (Lovett, Steinbach, et al., 2000).

Lovett and her colleagues have accumulated extensive support for their programs. The results of both PHAB/DI and WIST programs have shown that the phonological awareness and reading skills of students with severe reading disabilities could be improved with intensive remediation using these programs (Lovett, Lacerenza, Borden, Frijters, Steinback, & De Palma, 2000). Both methods led to training success and generalization to reading new regular words, however, the phonological training program led to greater generalization in the phonological domain (i.e., nonsense word reading), and the strategy training program resulted in greater transfer of learning to identifying unfamiliar real words (i.e., regular and exception word recognition; Lovett et al., 1994). In addition, effects were achieved in the later elementary grades (Lovett & Steinbach, 1997) and for students with more severe disabilities (Lovett, Steinbach, et al., 2000).

In further research, Lovett, Lacerenza, and Borden (2000) found that a combination of the strategies used in PHAB/DI and WIST was more effective than either intervention alone. The two training programs were integrated into one intervention called PHAST, the Phonological and Strategy Training program (Lovett, Lacerenza, et al., 2000). This program begins with PHAB/DI's phonological remediation and then integrates and scaffolds the four WIST strategies. In addition to being an effective program for students who have a reading disability, PHAST is also appropriate to the needs of average and gifted readers in the early elementary years and could be offered to an entire class as one part of an integrated, systematic program of reading

instruction (Lovett, Lacerenza, et al., 2000). Students in these programs generally receive an hour of instruction daily, 4 or 5 days a week, over 14 to 18 consecutive weeks.

The same components that were illustrated in Lovett's studies as being necessary and effective for students struggling to acquire reading skills have also been supported in other studies. For example, Blachman and her colleagues (2004) evaluated an intensive reading intervention for second and third grade students who had poor word recognition skills. It incorporated explicit and systematic reading instruction in phonological awareness, phonics, and frequent opportunities for text-based reading. Treatment sessions replaced any remedial reading instruction that might otherwise have been provided by the school; however, each student continued to get regular classroom reading instruction. Second and third grade students in the treatment group received 50 minutes of one-to-one tutoring for five days per week, for eight months. The tutoring program included explicit and systematic instruction and each lesson was built around a five-step plan and extended activities. First, each lesson began with a brief review of sound-letter associations learned in previous lessons, followed with an introduction of new sound-letter correspondences. A set of index cards, containing each of the graphemes (i.e., letters and letter clusters) was used, with vowels printed in red to stand out. Next, the student practiced phoneme analysis and blending by manipulating letter cards on a sound board to make new words which reflected a particular syllable pattern (e.g., closed syllables, such as *hid*; final "e" syllables, such as *hide*), following a systematic sequence. A fluency building activity was then introduced. For several minutes each day, the student practiced reading both phonetically regular words and high frequency words to develop more automatic recognition of the syllable patterns they were learning. The fourth step consisted of 10-15 minutes of oral reading practice, where the student read texts that were either based on their phonics lessons or a regular trade book or expository

text. During the final segment of each lesson, the tutor dictated six to eight phonetically regular words and two sentences which the student recorded. Extended activities were included in the last 10 minutes if time permitted, which included additional reading, journal writing, or games to reinforce previously learned skills. A control group continued to receive the remedial reading instruction that was being provided at their school at the time. At post-test, treatment students showed significantly greater gains than control students in both real word and nonword reading, reading rate, passage reading (measuring reading accuracy, rate, and comprehension), and spelling. The gains of the training versus the control group were largely maintained at a one-year follow-up.

In addition to Blachman et al. (2004), other group studies have also found that phonologically-based awareness training programs plus classroom reading instruction increased word recognition skills in students who struggle with reading. Levy and Lysynchuk (1997) showed that phonemic awareness and phonics training, in addition to classroom instruction using a whole language approach, increased word recognition. They compared 100 students in kindergarten and grade one who were struggling with reading. Only participants who read fewer than seven words on the word identification subtests of the Woodcock Reading Mastery Test and the WRAT-R were included in the study. The students were randomly assigned to one of five groups that received training in one or more aspects of phonological awareness: similarity of word beginnings (onset plus vowel), similarity of word endings (rimes), phoneme segmentation and blending, or simple repetition of whole words, and a control. Results found that both the onset/rime group and phoneme group performed better than repetition of whole words. These findings were replicated in a second experiment with students in the second grade. Participants in this experiment were identified as those who scored at or below the grade one level on the word

identification subtests of the Woodcock Reading Mastery Test and the WRAT-R. Maintenance of gains was found to be excellent after four to six months.

Torgesen, Morgan, and Davis (1992) compared two types of phonemic awareness and phonics training programs on word recognition and a comparison program with 48 kindergarten students who fell between the 15th and 50th percentiles on tests of phonological awareness. One of the training programs provided explicit instruction on both segmenting and blending phonological awareness tasks, one trained in blending skills alone, and the control group received no phonological awareness training. The students participated in 20-minute small group training sessions thrice weekly for 7-8 weeks. Results found that students who received both segmenting and blending skills training improved significantly on both types of skills and showed a positive training effect for word recognition. Torgesen (1997) found that 20 minutes a day, totaling 80 hours, of one-on-one tutoring in phonics based decoding strategies and practice in reading and writing enabled approximately 75% of first graders who had been in the bottom 10th percentile in phonological skills in kindergarten to move to national averages in timed and untimed reading decoding measures. Similar results (Torgesen, Wagner, Rashotte, Alexander, & Conway, 1997) were achieved with older students with severe reading disabilities (average age of 10 years); however, the one-on-one tutoring was much more intensive, increasing to two hours a day for 80 hours. Torgesen and his colleagues (1999) also compared two programs of varying intensity of instruction with a regular classroom reading program for 135 students from kindergarten to grade two who scored below the 30th percentile in phonological awareness tests. Students in the two treatment conditions were provided with four 20 minute sessions of one-to-one instruction per week for two and a half years. The sessions were led by either teachers or teacher aides. Results

found that the most phonemically explicit program for which students received training in phonemic awareness and phonics produced the strongest growth in word level reading skills.

Studies have also found that implementation of phonologically-based training programs in place of classroom remediation training have positive effects on word recognition skills. For example, in a two year program, Williams (1980) evaluated a program that provided explicit and systematic training in phonemic awareness and phonics to students aged 7 to 10 years who had reading disabilities. The program was developed to serve as a supplement to any reading program that was currently being used in the classroom. Students learned to analyze orally and visually presented syllables and short words into phonemes and then blended phonemes into syllables and words. Results reported significant gains for students with reading disabilities and students who struggle to learn to read. What was unique to this study was that no extensive teacher-training, teacher-aides, or other unusual classroom support was required for its implementation, so it can be easily used in the regular classroom.

Training in phonologically-based skills for students with reading disabilities using computers has also shown positive results. Wise and Olson (1995) used a computer program to teach phonemic awareness and phonics skills to 103 students (average age of nine years) in second- to fifth-grades who were in the lower 10% of their class in word decoding. Students received 50 half-hour training sessions over four months in place of their regular remedial reading or language arts class. Compared to a group trained in comprehension strategies, the group taught with phonologically-based exercises demonstrated a substantial growth in phonemic awareness, word recognition, and nonword reading. One year later, with no further training, the phonologically-based training remained stronger in phonemic awareness and nonword reading (Olson, Wise, Ring, & Johnson, 1997).

Although there are many studies that provide evidence that the difficulties for students struggling in the area of phonological awareness and word recognition can be improved, more recent studies have extended the previous work in this area by generalizing to teachers conducting and implementing the programs rather than researchers. These studies have examined whether previous findings would transfer to the public school setting, where these interventions would typically take place. Fuchs and colleagues (2002) examined three different instructional programs delivered to 25 kindergarten students on Individualized Education Programs (IEP) and who had low scores on a Rapid Letter Naming test. The programs were phonological awareness training, phonological awareness training with beginning word recognition instruction, and a control condition. Results showed that improvement in beginning-reading programs can be achieved in regular classrooms without researcher-led intervention and that the students in the phonological awareness training with beginning word recognition instruction outperformed their counterparts in the other two groups. O'Shaughnessy and Swanson (2000) compared the effectiveness of two reading interventions in a public school setting with 45 second grade students with scores on the Woodcock Reading Mastery Tests – Revised and the Test of Phonological Awareness below the 25th percentile. Students were randomly assigned to 6 weeks of one of three programs: phonemic awareness and phonics, onset-rime training and phonics, or math training. Results found that students in both the phonemic awareness plus phonics training and the onset-rime plus phonics training achieved significant gains in beginning reading skills and indicated that positive results can also be attained in regular classrooms without the additional supports usually available to researcher-led interventions. In another study, Brown and Felton (1990) examined 42 students in grades one and two who scored below the 16th percentile on tests of phonological awareness, naming, and auditory short-term memory. These students

were randomly assigned to receive either systematic phonics instruction or instruction in whole language in their regular classrooms. The instruction took place in groups with eight students and was led by specially trained teachers. At the end of first grade, significant differences were found between groups on nonword reading and the ability to spell phonetically regular words. In addition, at the end of grade two, significant differences were found in reading of polysyllabic real words and decoding of monosyllabic and polysyllabic nonsense words. The study concluded that structured, systematic phonics instruction results in more favorable outcomes than does a context emphasis approach.

Studies have shown that by using explicit and systematic phonemic awareness and phonics interventions in word recognition, measurable progress in word reading skills can be achieved throughout the elementary school years, even with students with the most severe reading disabilities (e.g., Lovett, Steinbach, et al., 2000). All of these findings suggest that measurable change may be achieved following word recognition training for students with initial poor reading skills.

Reading Comprehension

It is important to begin instruction in reading comprehension early in the elementary school years, and this instruction becomes increasingly important in the mid to late elementary grades (Sweet & Snow, 2003). Reading comprehension consists of the processes of understanding and constructing conceptual knowledge from a text through active interaction and involvement with the text (Guthrie, Wigfield, & Perencevich, 2004). Though comprehension was once thought of as the natural result of decoding plus oral language, comprehension is now viewed as a much more complex process involving experience, knowledge, thinking, and teaching (Fielding and Pearson, 1994). Reading comprehension is now perceived as being a

complex set of skills that is not fully understood or easily remediated (e.g., Kamps, Abbott, Greenwood, Wills, Veerkamp, & Kaufman, 2008).

Numerous studies have demonstrated the positive effects of comprehension instruction on students who struggle with reading (van den Bos, Brand-Gruwel, & Aarnoutse, 1998). Oakhill (1993) stated that some students who decode words quickly and accurately showed surprisingly poor understanding of what was read. Although remedial efforts in reading typically focus on lower order reading skills, such as word recognition and word attack, research suggests that both teachers and researchers are increasingly exploring the efficacy of methods for improving students' reading comprehension (Graham & Johnson, 1989).

Guthrie and his colleagues have developed a research-based classroom program of instruction called Concept-Oriented Reading Instruction (CORI; Guthrie, Wigfield, & Perencevich, 2004). One aspect of this program emphasizes teaching effective reading comprehension strategies. Guthrie and his colleagues have provided compelling evidence supporting CORI's effectiveness in improving the reading comprehension of normal readers and students performing below grade expectations (Guthrie, Anderson, Alao, & Rinehart, 1999; Guthrie, McRae, & Klauda, 2007; Guthrie, Wigfield, Barbosa, et al., 2004). Through extensive research, Guthrie and his colleagues identified eight evidence-based comprehension strategies: activating background knowledge, questioning in reading, searching for information, summarizing during reading, organizing graphically, structuring story, elaborative interrogation, and question-answer-relations (Guthrie, 2005; Guthrie, Wigfield, & Perencevich, 2004).

Other studies have also focused on identifying effective evidence-based reading comprehension strategies. After reviewing more than 100,000 studies, the National Reading Panel identified strategies that were best supported by research: comprehension monitoring,

cooperative learning, graphic organizers, question answering, question generation, story structure, and summarization (National Reading Panel, 2000). Pressley and his colleagues also examined evidence-based reading comprehension strategies and included summarization, representational- and mnemonic imagery, story grammar, question generation, question answering, and prior knowledge activation strategies as being effective strategies for elementary readers (Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989).

Reading Comprehension Strategies

Reading comprehension strategies are the techniques readers use to process a text (e.g., McCormick & Waller, 1987). Many reading comprehension strategies have been proposed, however, only some have been shown to be effective with elementary school students and with students struggling with reading. Reading comprehension instruction for students struggling with reading, including those with reading disabilities, is not as well-researched as word recognition. Although research on reading comprehension has largely been developed in the context of normally achieving readers, these strategies are also beneficial for students struggling with reading. Research in reading comprehension has suggested that while students may have the ability to understand text, they are inefficient at self-initiating effective strategies (Cross & Paris, 1988; Gersten, Fuchs, Williams, & Baker, 2001; Jitendra, Cole, Hoppes, & Wilson, 1998). Poor comprehenders have difficulty with higher-order comprehension skills, such as making inferences from text, integrating ideas, and monitoring their own comprehension (Oakhill, 1993).

Pearson and Gallagher (1983) identify four components of strategy instruction called the "Gradual Release of Responsibility Approach". This approach emphasizes modeling, think alouds, scaffolding, guiding students in small groups, providing large blocks of time for students to read independently, and practice using and applying the strategy. The goal of this approach is

for students to reach independence and use strategies automatically and independently. The first stage involves teacher modeling. The teacher explains the strategy to the students and demonstrates how to apply the strategy successfully. The teacher uses think alouds to model the mental processes used when reading. Students follow along while the teacher explains what, why, and when to use the strategy. The second stage consists of modeling and guided practice. After explicitly modeling the strategy, the teacher provides opportunities for students to try the strategy and gradually gives the student more responsibility for completing the task on their own. The teacher scaffolds the students' attempts and supports student thinking, while giving feedback during discussions. The teacher observes, provides feedback, and helps students in small groups, as needed. The third stage involves independent practice. After working with the teacher and with other students, the students try to apply the strategy on their own. The students receive regular feedback from the teacher and other students. The fourth and final stage consists of the application of the strategy in real reading situations. When students have a clear understanding of a strategy, they apply the strategy to a new genre or format of text. Students demonstrate the effective understanding and application of strategies by using them in more difficult text. The teacher continues to observe and assess.

Modeling, think alouds, scaffolding, and guided practice are major components of effective reading instruction. Research has shown that instruction of reading comprehension strategies should include direct explanation, modeling and scaffolding, and involve guided practice, with the goal being independent use of the strategy by the student (Guthrie, Wigfield, & Perencevich, 2004). At the onset of the strategy instruction, the teacher should provide a brief explanation about the strategy. This includes what the strategy is, how and why it should be used, and when and where to use it.

Modeling has been shown to be a powerful instructional technique (De Corte, Verschaffel, & Van De Ven, 2001). In modeling, the teacher explicitly demonstrates to the students how to use a particular strategy with a specific text. Modeling is often used during shared reading. Modeling can be used during shared reading to focus on reading comprehension strategies such as activating background knowledge, summarizing, predicting, clarifying, questioning, visualizing, monitoring, and connecting (Fisher, Frey, & Lapp, 2008). Regardless of the strategy being modeled, modeling must be followed by opportunities to practice and apply skills (Fisher, Frey, & Lapp, 2008).

Think alouds are a way of modeling the thinking process that goes on while reading. Hall and Myers (1998) suggest that thinking aloud while modeling is important, so the teacher can externalize for students the strategic activities and processes that usually occur internally. By thinking aloud, teachers can model reading strategies to students and demonstrate the different processes involved in reading (Fisher, Flood, Lapp, Frey, 2004). According to Wilhelm (2001), the steps involved in the think aloud process in normally achieving students include the following: a) choose a short section of text; b) select an appropriate strategy; c) state the purpose for choosing that particular strategy; d) read the text aloud to students and model the chosen strategy as you read; e) have students annotate the text; f) brainstorm cues and strategies used; g) teach students to generalize the strategies; and h) reinforce the think-aloud with follow-up lessons. To adapt these strategies for students who struggle with reading, Migyanka and colleagues (2005) recommended choosing a strategy that will fit the struggling student's ability level and needs; model the think-aloud process while students listen; model the think-aloud process and have students help out; have one student engage in the think-aloud process in a large group while the teacher and other students monitor and help; have students demonstrate think-

alouds in small groups while the teacher and other students monitor and help; and finally, have students perform think-alouds individually and in writing, and then compare their responses with others.

Scaffolds are often used immediately following modeling. Scaffolding refers to supported learning, where both the teacher and students are co-participants in a learning activity (Guthrie, Wigfield, & Perencevich, 2004). In the beginning, the teacher performs most of the activity, while the student follows along. Scaffolds serve as aids during the initial learning of a complex skill or cognitive strategies and are gradually removed as the student becomes more proficient in using the strategy (Rosenshine, Meister, & Chapman, 1996). As the student gains confidence in using the strategy, the teacher reduces the scaffold and has the student perform more and more of the strategy on his own. The teacher provides the student with more freedom and more opportunities for using the strategy.

For example, an teacher may begin scaffolding for the use of graphic organizers by providing the student with a diagram and showing the student how to fill in the chart. Later in the instruction, the student may fill out the diagram on his own, with some assistance from the teacher. Eventually, the student will be able to fill in the chart on his own, without assistance. A high level of scaffolding for reading comprehension strategies is represented by a high level of teacher direction and prompting, while a low level of scaffolding is displayed when the student performs the activity mostly on their own.

Guided practice involves the teacher providing extended practice as the students gain competence in using a strategy. Guided reading is a teaching approach used with all readers, struggling or independent, that has three fundamental purposes: to meet the varying instructional needs of all the students in the classroom, enabling them to greatly expand their reading powers;

to teach students to read increasingly difficult texts with understanding and fluency; to construct meaning while using problem-solving strategies to figure out unfamiliar words that deal with complex sentence structures, and understand concepts or ideas not previously encountered (Iaquinta, 2006). Guided reading requires students to read the selected text to themselves first and to identify (highlight) unknown words or phrases, then apply reading strategies as they read the text aloud in pairs or in a group (Malik, 1996). Short, Kane, and Peeling (2000) described guided reading as opportunities that allow the teacher to model and support the use of cues and self-monitoring reading strategies, which may include the use of pictures to help construct meaning, making predictions, rereading, segmenting and blending phonemes, and finding familiar word chunks to decode words.

Guided reading has become one of the most important reading instructional practices (Fawson & Reutzel, 2000). Guided reading usually involves small groups of students who are at a similar place in their reading development (Iaquinta, 2006). The role of the teacher is essential to guided reading. The teacher guides students as they read a passage and can observe the students' strengths and weaknesses (Malik, 1996). Ongoing observation of students, combined with systematic assessment, enable teachers to draw together groups of students who fit a particular instructional profile (Iaquinta, 2006).

There are six reading comprehension strategies that will be the focus of this thesis: 1) graphic organizers; 2) story grammar knowledge; 3) question generation; 4) searching for information; 5) summarizations; and 6) activating background knowledge (e.g., Guthrie et al., 2004; National Reading Panel, 2000; Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989).

The first strategy involves the use of graphic organizers. Graphic organizers are visual and spatial representations designed to represent and organize the meanings and relationships of

text-based knowledge through the use of lines, arrows, and a spatial arrangement that describe text content, structure, and key conceptual relationships (Darch & Eaves, 1986; Guthrie et al., 2004). Graphics organizers can include drawings, charts, maps, outlines, and Venn diagrams. Graphic organizers help facilitate the students' understanding of the text through visual depictions of key terms and concepts and the relationships among them (Simmons, Griffin, & Kame'enui, 1988).

The main effect of graphic organizers appears to be on the improvement of the reader's understanding of the content that has been read (National Reading Panel, 2000). After examining 21 group design intervention studies, Kim, Vaughn, and Wanzek (2004) found that the use of graphic organizers (i.e., semantic organizers, framed outlines, cognitive maps with and without a mnemonic) was associated with improved reading comprehension overall for students who struggle with acquiring reading skills.

The second strategy, using story grammar knowledge (also referred to as story structuring and story mapping), refers to the students' understanding of the setting, plot, characters, motives, themes, and their relationships in texts (Guthrie et al., 2004). Students learn about the general structure of a story, in that the beginning contains information about the time of the story, where it took place, and the central characters, followed by an initiating event which sets the goal or problem, followed by attempts to achieve the goal or solve the problem, and concluding with attaining the goal (Pressley, Johnson, et al., 1989). Students are taught to ask and answer five questions as they read: a) who is the main character, b) where and when did the story take place, c) what did the main characters do, d) how did the story end, and e) how did the main character feel (Short & Ryan, 1984).

Story maps are used in story grammar to provide a visual representation for key information in a text. Story maps help increase reading comprehension skills by prompting students to recognize story structuring elements such as characters, setting, and problem (Dimino, Taylor, & Gersten, 1995).

The third strategy, question generation, refers to students asking questions about the content of a story before and during reading to help them understand the text and topic being read (Guthrie, Wigfield, & Perencevich, 2004). It is a cognitive strategy that involves creating questions to focus the student's attention on content (Rosenshine, Meister, & Chapman, 1996). Research has shown that the use of question generation strategies has demonstrated improvements in reading comprehension with students who struggle with reading (Hansen and Pearson, 1983; Therrien, Wickstrom, & Jones, 2006; Wong & Jones, 1982).

The fourth strategy is called searching for information. Using this strategy involves finding information in the text by developing goals, selecting and extracting useful sections of a text, combining new and old information, and continuing this process until goals are fulfilled (Guthrie, Wigfield, & Perencevich, 2004). The purpose of this strategy is to read and use the most relevant portions of the text. Students locate sections by using text features such as the table of contents, index, pictures, and topic sentences to help them search effectively (Guthrie, Wigfield, & Perencevich, 2004).

There are five steps involved in searching for information (Guthrie, Wigfield, & Perencevich, 2004; Guthrie & Mosenthal, 1987). The first step involves goal formation, where students establish a goal (or problem to be solved). The second step is category selection. Students use text features to guide searching and choose sections of text to inspect. Next, students extract information. After locating text relevant to their goals, students read the selected text to

identify goal-relevant information. The fourth step is integration. Students decide if the selected text is relevant to the search goal. The last step involves recycling. Students repeat the previous four components until successful application of the strategy is obtained. Dreher and Sammons (1994) suggested the use of reminders to help students while searching for information. These include encouraging the students while they are establishing their goals, reminding students of their goals while they search through the text, and reminding students to integrate the information they were searching with the goal.

The fifth strategy, summarization, refers to the student forming an accurate abstract representation of the text after reading all or a substantial portion of a text (Guthrie, Wigfield, & Perencevich, 2004). This includes identifying the main or most important ideas that integrate the other ideas or meanings of the text into a coherent whole (National Reading Panel, 2000). Summarizing was found to be an effective strategy for students who struggle with reading (Jitendra, Hoppes & Xin, 2000; Jitendra, Cole, Hoppes, & Wilson, 1998). Guthrie and colleagues (2004) teach the component parts of summarization: a) identify important concepts in the paragraph, often by locating key words within the text; b) identify key supporting information, consisting of words or phrases; c) identify and omit less relevant details; and d) compose a brief statement (one to four sentences) representing the summary. Given the difficultly of summarization, it is recommended that instruction on this strategy be carefully scaffolded, with multiple opportunities for learning (Guthrie, Wigfield, & Perencevich, 2004).

The last strategy, activating background knowledge, involves students making predictions about content based on their personal prior knowledge (Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989). Students' use of this strategy before reading a text has been found to improve their reading comprehension (Dole, Brown, & Trathen, 1996). While all students benefit from

activating background knowledge, it has also been shown to improve reading comprehension for students who struggle with reading (Carr & Thompson, 1996). Research has found that the amount of prior knowledge a reader has about a topic is the best determinant of how much will be understood and remembered as it is read (Pearson & Fielding, 1991).

Teaching multiple comprehension strategies during a short time has been shown to be ineffective (e.g., Dole, Duffy, Roehler, & Pearson, 1991). Single strategies that improve performance are recommended in this thesis, as research demonstrates that strategies should be introduced one or a few at a time and taught explicitly and systematically, rather than introduced in a wholesale fashion with superficial coverage of individual procedures (e.g., Pressley, Goodchild, Fleet, Zajchowski, & Evans, 1989). Although strategies are separated for initial instruction to help in their learning, students should also be taught how to combine strategies productively (Guthrie et al., 2004). Relating specific strategies, such as those described in the evidence-based studies of Guthrie et al. (2004), National Reading Panel (2000) and Pressley, Johnson, et al. (1989), to curriculum outcomes should assist school psychologists and teachers in finding explicit instructional practices for individual students that are proven to be successful in improving reading comprehension.

Role of the School Psychologist

The role of the school psychologist is less defined in terms of helping a struggling reader. The role of the school psychologist has been the subject of debate and criticism since the 1954 Thayer Conference defined the levels of training, credentialing, and practice for school psychologists (Levinson, Thomas, & Orf, 1996). Within the school environment, the role of the school psychologist can be ambiguous due to school personnel being unaware of the duties, obligations, training and skills of the school psychologist (Hagemeier, Bischoff, Jacobs, &

Osmon, 1998). The services that are expected to be provided by school psychologists in helping schools meet the needs of all students have been outlined in the Standards for the Provision of School Psychological Services (National Association of School Psychologists [NASP], 1997). The National Association of School Psychologists (1997) classifies school psychologists' roles in six broad areas: 1) consultation, defined as meeting to discuss, decide, or plan, typically regarding prevention or intervention; 2) assessment, defined as the process of obtaining data to analyze factors critical to referral questions; 3) direct service, defined as face-to-face interaction to enhance the social, emotional, or educational status of the client; 4) supervision, defined as the management of activities of a school psychologist for quality assurance and improvement of performance; 5) research, defined as the discovery of facts that will enhance the educational process and general well being of clients; and 6) program planning and evaluation, defined as the process of designing and evaluating the effectiveness of educational programs for individuals and groups.

One of the most prominent roles of the school psychologist has been conducting psycho-educational assessments. One estimate of assessment activities found that they account for about 50% of the practice hours of school psychologists, followed by consultation (20%) and treatment (19%) (Stinnett, Havey, & Oehler-Stinnett, 1994). Assessments measure the current level of cognitive and academic achievement of a student and may identify areas of strengths or weaknesses or indicate a learning disability. After conducting an assessment with a student, the school psychologist provides the school and family with a report detailing the results of the assessment and recommendations for intervention, as well as feedback sessions and consultation with school-based teams.

Recommendations

One of the important outcomes of a psycho-educational assessment includes recommendations; however, research suggests that school psychologists are not directing enough effort into recommending evidence based practices (Crofts, 2007; Shinn & McConnell, 1994). When selecting recommendations, school psychologists and teachers often refer to manuals such as *The Pre-Referred Intervention Manual* (McCarney, Dunderlich, & Bauer, 1993), books including *I Read It, but I Don't Get It: Comprehension Strategies for Adolescent Readers* (Tovani, 2000), and websites such as Mel Levine's *All Kinds of Minds* (All Kinds of Minds, 2007) to acquire strategies. The problem with using this method is that many of the strategies found in these materials have not been shown to be effective, therefore there is no scientific evidence that proves that these strategies can improve students' skills in reading. For example, in the book *50 Literacy Strategies: Step By Step* (Tompkins, 1998), only 16 of the 50 strategies offered in the handbook were published in peer reviewed journals, increasing to only 20 of the 50 strategies in the second edition (Tompkins, 2004).

There is a need for school psychologists to be up to date on the research about effective instruction and intervention (Shinn & McConnell, 1994). In an examination of psycho-educational reports written by school psychology students for students with reading disabilities, Crofts (2007) found that a considerable proportion of the recommendations did not include evidence-based practices. In addition, Crofts (2007) found that in instances where evidence-based recommendations were used, the recommendations were not in-depth and did not specify the range of instructional strategies necessary to effectively address reading difficulties. Another concern is that while school psychologists write recommendations for teachers to implement, it is not clear whether these recommendations are written in a language that is readily accessible to

teachers. Psycho-educational assessments provide information on the current academic functioning of students compared to a normative group, but gathering this information is of little value if teachers are unable to relate the information and recommendations to their classroom. Currently, it is not common practice for school psychologists to link their recommendations to curriculum outcomes. This thesis provides school psychologists and teachers with a resource which offers both evidenced-based recommendations in reading instruction and relates these recommendations the Atlantic Canada English language arts curriculum.

Collaboration

One technique that school psychologists and teachers can use to improve intervention is collaboration. Collaboration in this field may be defined as an interactive process enabling people with diverse expertise to work together to solve teaching, learning, and curriculum-related problems (West & Idol, 1987). Idol, Nevin, and Paolucci-Whitcomb (1995) stated that the objective of collaboration was to work together to provide the most effective services to students in the school. Common to all definitions of school-based collaboration is a mutual, coordinated effort to plan, implement, and evaluate programs for students. The result is a more effective and comprehensive interventions.

Collaboration involves a collective expertise and shared decision making of teachers and school psychologists, and thus, school psychologists are not seen as the expert, but are jointly responsible in the decision making and planning in the school. This approach moves the role of the school psychologist away from being that of an expert to being that of a facilitator. The term collaboration differs from that of consultation, which is traditionally viewed as a process involving an expert who solves an existing problem. Consultation involves the school psychologist relaying recommendations to an teacher without describing or modeling the

strategies. Pryzwansky (1974) found that collaboration was more favorable than consultation. He suggested that school psychologists are unlikely to experience success using the expert-based consultative approach and instead advocated for a collaborative approach. Using this model, school psychologists and teachers work together to develop recommendations for individual students.

School psychologists are trained in the practice of consultation and possess the skills to facilitate collaboration with teachers (Roberts, 2003). The National Association of School Psychologists (NASP, 2000) highlights consultation/collaboration and home/school/community collaboration as key domains of school psychology practice. Unfortunately, contact between teachers and school psychologists is often minimal. Caseload size, meetings, assessments, report writing, and other obligations and responsibilities often interfere with attempts at collaboration by school psychologists (Friend & Cook, 1996). Despite the high workload, a more recent study found that school psychologists who were surveyed regarding their use of collaboration reported regular collaboration with administration (99%), special education teachers (99%), and regular education teachers (95%) (Staton & Gilligan, 2003). This shows promise that collaboration is being used more regularly by school psychologists.

Teachers are also an important part of the collaborative approach, as they are often in the best position to identify and refer children experiencing educational and psychosocial related difficulties (Meyers & Swerdlik, 2003). While school psychologists can offer many suggestions and recommendations, ultimately it is the teacher who chooses and implements the strategies in the classroom. Since the improvement of the students' skills depends on the teachers' practices, the recommendations placed forth by school psychologists must be capable of being replicated by teachers in the regular or resource classroom. By linking the psycho-educational

recommendations to curriculum outcomes, it is possible to help strengthen collaboration, expand the role of the school psychologist, and aid in the successful implementation of recommendations by teachers.

Osterloh and Koorland (1997) examined suggestions made by school administrators regarding ways that school psychologists could collaborate more effectively in schools. These suggestions included: developing working relationships and friendships with teachers and administrators; scheduling regular times to meet with teachers; developing treatment plans with teachers; being receptive to teacher concerns about students; assisting in school development and teacher training; spending more time in schools and being reliable about attendance; maintaining a consistent schedule and being flexible in service delivery; and trying to focus on prevention and early intervention. These suggestions stress the importance of the school psychologist working with and valuing the role and experiences of the teachers in the school.

Collaboration is important, as it facilitates communication between the school psychologist and the teacher who has responsibility for a student's programming in the regular or resource classroom. Research has shown that interventions that were developed collaboratively between teachers and school psychologists were viewed more positively by teachers, and thus were more likely to be successfully implemented by teachers in the classroom (Kutsick, Gutkin, & Witt, 1991). Research has also shown that an absence of collaboration with the classroom teacher can result in recommendations from the psycho-educational assessment not being implemented (Borghese & Cole, 1994). Therefore, collaboration can be extremely helpful in the design and implementation of evidence-based recommendations. In terms of this thesis, for the recommendations to be relevant and meaningful, collaboration between school psychologists and

teachers is vital. By providing information on evidence-based practices, teachers and school psychologists can begin discussions with shared knowledge bases in this area.

Atlantic Canada English Language Arts Curriculum

The Atlantic Canada English language arts curriculum is used by all schools in Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland and Labrador. The Vision Statement states that "the Atlantic Canada English language arts curriculum is shaped by a vision of enabling and encouraging students to become reflective, articulate, literate individuals who use language successfully for learning and communicating in personal and public contexts" (Nova Scotia Department of Education and Culture, 1996, p.1). The Atlantic Canada English language arts curriculum document offers teachers a framework with which to refer when planning their instructional practices. Through the document, teachers receive curriculum guidelines for each grade level. Therefore, regardless of teaching style or instructional method, the curriculum outcomes offered in the document provide reference points which identify what students in any province of Atlantic Canada are expected to know and be able to do at key stages in their curriculum. Given that this document is used by all schools in the four Atlantic Provinces, a student may move to another school anywhere within those provinces, knowing that the new teacher will be working towards the same framework of curriculum outcomes at any particular grade level.

In the Atlantic Canada curriculum, English language arts is broken down into three strands: Speaking and Listening, Reading and Viewing, and Writing and Other Ways of Representing. In this thesis, the focus is on evidence-based practices for students who struggle to acquire reading skills and will be directed at the Reading and Viewing component of the curriculum. The Reading and Viewing component is arranged in terms of general, specific, and

key-stage outcomes. Together, these curriculum outcomes give teachers, as well as students and parents, an outline of what is expected at each stage of school, in each subject area and grade level, from entry to grade 12.

The Reading and Viewing strand of the Curriculum consists of four general curriculum outcomes. General curriculum outcomes identify what students are expected to know and be able to do upon completion of study in a curriculum area. In Reading and Viewing, students are expected to: select, read, and view with understanding a range of literature, information, media, visual and audio texts; interpret, select, and combine information using a variety of strategies, resources, and technologies; respond personally to a range of texts; and respond critically to a range of texts, applying their understanding of language, form, and genre. For example, one of the general curriculum outcomes for Grade 4 Language Arts states that "students will be expected to describe their own processes and strategies in reading and viewing" (Nova Scotia Department of Education and Culture, 1998, p.40). These four general curriculum outcomes are further broken down into specific outcomes, which can be found in the Curriculum documents (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998; Nova Scotia Department of Education and Culture, 1998).

Specific curriculum outcomes provide a description of what is expected at the end of each grade level. For example, one of the specific curriculum outcomes for grade 5 states that "students will be expected to use pictures and illustrations, word structures, and text features to locate topics and obtain or verify their understanding of information" (Nova Scotia Department of Education and Culture, 1998, p.60).

Key-stage curriculum outcomes describe the knowledge and skills related to English language arts that students are expected to demonstrate by the end of grades 3, 6, 9, and 12 as a

result of their cumulative learning in a curriculum area. For example, by the end of the first key stage (grade 3), students are "expected to use and integrate, with support, the various cueing systems (pragmatic, semantic, syntactic, and graphophonic) and a range of strategies to construct meaning" (Nova Scotia Department of Education and Culture, 1998, p.17). The emphasis at all levels of the English language arts curriculum is on what students are able to do as a result of the learning experiences provided by teachers.

It has been proposed that the Atlantic Canada English language arts curriculum framework provides a coherent, integrated view of the learning and teaching of English language arts which reflects current research and theories (Nova Scotia Department of Education and Culture, 1996). Despite this statement, a perusal of the Curriculum document failed to find any reference to research practices. Although outcomes offer clarification on the expectations of what students in Atlantic Canada should know and be able to do in the English language arts curriculum, the outcomes do not provide evidence-based practices for helping students reach these objectives. This should be an important aspect of the curriculum document, because research has found that academic success, as defined by high school graduation, can be predicted with reasonable accuracy by knowing the student's reading skill at the end of grade 3 (Slavin, Karweit, Wasik, Madden, & Dolan, 1994). Chard and Kameenui (2000) found that most instruction for students who struggle with reading is not aligned with recent research on preventing reading difficulties. With the focus of academic success placed on the achievement and failure of reaching key-stage outcomes, more emphasis should be placed on the teachers and school psychologists to provide instructional methods that teach students who struggle with reading the basic skills needed to excel within the curriculum.

Method

The literature was examined in order to summarize evidence-based practices of reading instruction for students who struggle with reading in the elementary grades, entry-level to grade six. This involved the use of multiple sources of research articles and research summary documents.

The second step involved the creation of recommendations based on evidence-based practices. Recommendations were written according to the five areas: phonemic awareness, phonics, sight word instruction, higher-level strategies, and reading comprehension.

The third part of the thesis consisted of linking evidence-based practices and recommendations to the curriculum outcomes for students in grades primary to 6. The Atlantic Canada English language arts curriculum and supporting documents were analyzed to determine how research-based practices which improve the skills of poor readers related to curriculum outcomes and program development. When possible, evidence-based recommendations were linked to general, specific, and key-stage curriculum outcomes and to other relevant areas in the Atlantic Canada English language arts curriculum and supporting documents.

The final step involved creating a document that provides school psychologists and teachers with a resource which clearly delineates evidence-based practices that can be used in helping students who struggle with reading at various stages of the Atlantic Canada English language arts curriculum (found in Appendix A). The purpose of the resource document was to supply school psychologists, teachers, and others within the education community with a reference which they can refer to when looking for evidence-based practices for students with reading disabilities. The document consists of two parts: applying the research on reading instruction and instructional practices for supporting struggling learners. The booklet integrates

and links the instructional strategies to the Atlantic Canada English language arts curriculum and provide lists of resources, including books, web resources, and programs, when available. The information was also presented using examples of recommendations to demonstrate how they can be used in psycho-educational assessment reports to facilitate collaboration between school psychologists and teachers.

The booklet summarizes the best strategies for effectively teaching students who struggle with reading based on the findings of studies which examined evidenced based practices in reading instruction. This booklet also promotes collaboration as an effective method for introducing and strengthening the use of evidence-based practices in schools.

Discussion

This thesis provides a framework on which school psychologists, teachers, and others in the learning community can base decisions concerning instructional techniques, using curriculum outcomes as a reference point. This framework is directed specifically towards students who struggle to acquire reading skills and reflects the current research of evidence-based practices in this field. While the English language arts curriculum document is primarily used by teachers, it can also be beneficial for school psychologists to review while planning recommended instructional practices. This thesis also stresses the importance of collaboration between school psychologists and teachers in formulating recommendations.

This thesis provides a practical resource and links to the Atlantic Canada English language arts curriculum, which assists and supports assessment and instructional practices in the four Atlantic Provinces. The Atlantic Canada English language arts curriculum document offers a vision of what the learning and teaching of English language arts can become when well supported by the education system and community and when strengthened by collaboration

among students, teachers, administrators, and community members (Nova Scotia Department of Education and Culture, 1996). In the 2004 Programme for International Student Assessment (PISA) study, although the performance of students in the four Atlantic Provinces in the area of reading was at or above the middle of the international range, compared to the other Canadian provinces, the performances of students in Newfoundland, Prince Edward Island, Nova Scotia, and New Brunswick was significantly lower than the rest of Canada (Willms, 2004). This finding justifies the need for supporting the Atlantic Canada English language arts curriculum by linking evidence-based practices in reading instruction to curriculum outcomes.

The strategies and research described in this thesis provide an overview of the evidence-based approaches for students who are struggling with reading. It went beyond a simple literature search by integrating the research, formulating recommendations, and explaining strategies in terms that are identifiable to teachers. A strength of this thesis is that an attempt was made to link the methods provided with the Atlantic Canada English language arts curriculum and with the beliefs about provincial curriculum and classroom practices. It is hoped that this thesis will help to bridge the current gap between research and practice by providing school psychologists and teachers with an informed and empirically validated approach to reading instruction.

In recent years, organizations and researchers have undertaken the task of reviewing the research on effective reading instruction, however, none have been found to link the research to curriculum outcomes. For example, the Report of the National Reading Panel (2000) is a well-publicized research study which outlines the most effective guidelines for teaching all students to read. Unfortunately, it does not link their guidelines to curriculum outcomes. Another well-known summary of the research on reading instruction, a report of the National Research Council titled Preventing Reading Difficulties in Young Children (Snow et al., 1998), examined how to

reduce reading difficulties, but it also did not relate their suggestions to curriculum outcomes. By linking evidence-based research to curriculum outcomes, and providing the material in the form of a booklet, an attempt was made to make this thesis beneficial to both school psychologists and teachers.

This thesis has the potential to impact many individuals, ranging from those in school psychology, education, and administration, to students in the educational system. In recent years, teachers across the country have been revising curriculum to reflect new insights about the way students learn and to reflect changes in Canadian society (Cape Breton-Victoria Regional School Board, 2004). While reading disabilities, such as dyslexia, are claimed by some researchers as being genetic (Pennington, 1990), it has been suggested that instruction does play a major role in the development of reading difficulties. For example, Calfee (1983) suggested that the majority of students who are identified as being dyslexic represent an instructional dysfunction rather than a constitutional disability. Given the implications for the education system if inadequate reading instruction contributes to reading difficulties, linking evidence-based practices to curriculum outcomes is an important resource.

With the recent demands of provincial, national and international elementary literacy assessments, teachers and administrators are under more pressure to design classroom activities that assist students in meeting the desired outcomes of the English language arts curriculum documents. For example, The Elementary Language Literacy Assessment was implemented in Nova Scotia in 2003 to assess the reading and viewing and writing outcomes of sixth graders as described in the Atlantic Canada English Language Arts Curriculum Guide: Grades 4–6. The assessment involves reading for information, reading literary prose and poetry, and viewing visual media text critically, as well as composing a piece of transactional writing, such as a letter,

and a piece of literary prose, such as a narrative. In addition to the provincial assessments, the nation-wide School Achievement Indicators Program (SAIP) (Council of Ministers of Education Canada, 1998) and international Programme for International Student Assessment (PISA) (Organisation For Economic Co-operation and Development, 2006) have also put the focus on student achievement and whether or not education systems are meeting the needs of their students.

Linking evidence-based practices of reading instruction to curriculum outcomes should not only be helpful to school psychologists and teachers, but should ultimately help students. Learning to read is one of the most important skills students accomplish in elementary school because it is the foundation for most of their academic endeavors (Stevens, Slavin, & Farnish, 1991). Students who are poor readers at the end of first grade almost never acquire average-level reading skills by the end of elementary school (Juel, 1988; Torgesen & Burgess, 1998).

One limitation of this study is that it examined strategy instruction without input from the teachers. Evidence-based practices were examined from research and linked to curriculum outcomes; however, gathering input from teachers was beyond the scope of the present paper. While this approach may have some strengths, given that research has suggested that school psychologists and teachers do not always direct enough effort into recommending evidence based practices (e.g., Crofts, 2007; Shinn & McConnell, 1994), it would be useful to investigate teachers' thoughts on the instructional practices that are summarized here as well as on system resources that could support successful implementation of these practices. One of the factors that Malouf and Schiller (1995) suggested as being important in the application of research-based practices was to obtain an understanding of teachers' attitudes toward research and the manner in which it affects their teaching. The current thesis did not address these factors, but, given that this

thesis is innovative in linking recommendations to evidence-based instructional practices and to curriculum outcomes, this thesis serves as a first step in this area.

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Appendix A

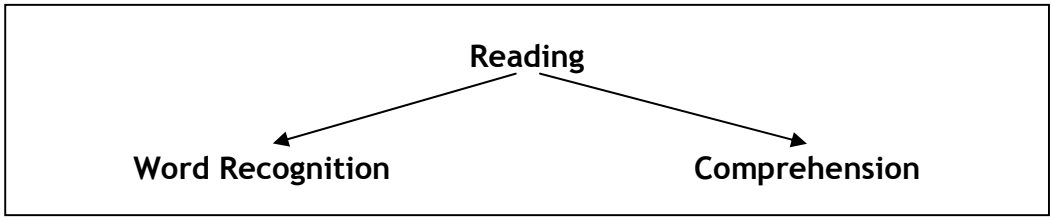
Organization of the Handbook

This handbook integrates evidence-based practices in instruction for readers who are not meeting grade-level expectations with the Atlantic Canada elementary English language arts curriculum outcomes. The booklet is divided into two sections. The first section examines research on reading instruction and the second section provides evidence-based recommendations for instruction for students who are having difficulty in reading words or in reading comprehension, which are linked to curriculum outcomes. The instructional methods outlined in this handbook may be used in a range of settings, including whole classrooms, small groups, or one-to-one settings, and are appropriate for typically achieving readers as well as for students who are struggling to meet expectations in reading.

Part 1: Applying the Research on Reading

Primary Components of Reading

There are two major components of reading: word recognition and comprehension. Research indicates that different skill levels in word recognition and comprehension account for a large proportion of the variance in reading ability in school-age children (e.g., Catts, 1993; Catts, Adolf, & Weismen, 2006; Curtis, 1980; Gough & Tunmer, 1986; Hoover & Gough, 1990). Using this approach, reading difficulties are present when a student experiences difficulties in word recognition, reading comprehension, or a combination of the two components.



Word Recognition

The majority of students who struggle with reading have considerable difficulty with word recognition skills (e.g., Share & Stanovich, 1995). Word recognition is the ability to recognize and read printed words. Word recognition should be emphasized in the earliest years of formal reading instruction (Sweet & Snow, 2003).

Research studies have overwhelmingly found that instruction for students who are struggling with reading must be even more explicit and systematic than the instruction required by the majority of children. For example, dramatic reductions in the incidence of word recognition difficulties have been demonstrated when explicit and systematic instruction in phonemic awareness and phonics is provided by the classroom teacher in the early grades (Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998). It is also known that explicit and systematic phonics instruction produces significant benefits for students from kindergarten through the early elementary grades and for students who struggle with reading (National Reading Panel, 2000). Studies have shown that by using explicit and systematic interventions in word recognition, measurable progress in phonological reading skills can be achieved throughout the elementary school years, even with the most severely disabled readers (e.g., Lovett, Steinbach, & Frijters, 2000).

Explicit instruction refers to how thoroughly the teacher is directly explaining, modeling, and guiding student learning. The term explicit instruction is used interchangeably in the literature

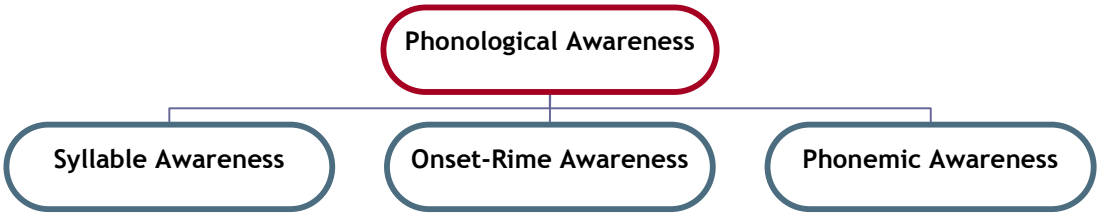
with the term direct instruction. Major components of explicit instruction include direct explanations of material in small steps, guiding students during initial practice, providing students with high levels of support to ensure an abundance of successful practice, and cumulative reviews (Simmons, Fuchs, Fuchs, Mathes, & Hodge, 1995). This type of instruction can be delivered to one student, to a small group of students, or to an entire classroom.

Systematic instruction is defined as a teaching method that clearly identifies a carefully selected and useful set of concepts and relationships and organizes the introduction of these into a logical instructional sequence (Partnership for Reading, 2003). Systematic instruction contains activities and lessons which are planned out over the entire content domain and provides students with ample opportunities to practice applying the knowledge of the material they are learning.

In order to increase word recognition, there are four primary areas that are the focus of intervention research: phonemic awareness, phonics skills, sight word recognition, and higher-level strategies for deciphering unknown words in texts. Numerous studies have demonstrated that word recognition and phonological awareness can be strengthened in several ways: (a) direct training in phonological awareness skills (e.g., Felton & Pepper, 1995; Martin, Claydon, Morton, & Binns, 2003); (b) increasing knowledge of, and facility with, letter-sound correspondences and with sounding out and blending strategies for word recognition (e.g., Byrne & Fielding-Barnsley, 1989; Foorman, 1995; Lovett, Warren-Chaplin, Ransby, & Borden, 1990); and (c) higher-level strategies for working out unknown, complex words (e.g., Gaskins, Downer, Anderson, Cunningham, Gaskins, & Schommer, 1988; Lovett, Lacerenza, & Borden, 2000). Effective programs spend a substantial amount of time each day, over a long period of time, incorporating explicit and systematic instruction in phonological awareness, phonics, sight word recognition, and higher-level word recognition strategies. Although individual strategies are presented in this booklet, it is encouraged that they are taught within the context of an intensive and systematic classroom program.

Phonological Awareness

Research suggests that word recognition problems are primarily caused by deficits in phonological processing (e.g., Share & Stanovich, 1995; Siegel, 1993; Stanovich, 1988). Phonological processing involves using sound units in processing written and oral language. One aspect of phonological processing that has received a lot of attention in reading research is phonological awareness. Phonological awareness refers to the ability to identify and manipulate parts of spoken language, such as syllables (syllable awareness), onsets and rimes (onset-rime awareness), and phonemes (phonemic awareness).



Phonological awareness develops from sensitivity of the larger units of syllables and rhymes and then moves towards the more advanced awareness of the smallest units, phonemes. Sensitivity to rhyme and syllables are developmental precursors of phonemic awareness, which, in turn, plays a considerable role in learning to read (e.g., Bryant, MacLean, Bradley, & Crossland, 1990).

Phonological awareness is one of the best predictors of success in reading acquisition (Adams, 1990). Well developed phonological awareness skills in the earliest school years are associated with successful reading achievement in later elementary grades (Juel, 1988; Torgesen, Wagner, Rashotte, Burgess & Hecht, 1997; Wagner, Torgesen & Rashotte, 1994). Juel (1988) found that the probability that a student who struggled with word recognition at the end of grade one would remain a poor reader at the end of fourth grade was 88%. This finding speaks to the importance of instruction in phonological awareness and phonics in the earliest school years. Failure to build basic literacy skills in the first year of school may have long term effects (e.g., Juel, 1988; Torgesen & Burgess, 1998). For example, Pianta (1990) stated that students who have poor instruction in the first year of school are seriously harmed by the bad early experience and tend to do poorly in subsequent years of school.

In regard to poor readers, research has shown that word recognition difficulties are often due to deficits in phonological awareness (Blachman, Tangel, Ball, Black, & McGraw, 1999; Cornwall, 1992; Felton, 1993; National Reading Panel, 2000). Research has also shown that training students who struggle to acquire reading skills in the area of phonological awareness, particularly when coupled with phonics instruction, has a beneficial impact on reading skills (e.g., Blachman et al., 2004; Lovett, Lacerenza, Borden, Frijters, Steinbach, & De Palma, 2000).

Phonemic Awareness

Phonemic awareness is a subcategory of phonological awareness. It has been indicated as being the most complex level of phonological awareness and the most important for learning to read (e.g., Lane, Pullen, Eisele, & Jordan, 2002). Phonemic awareness refers to the ability to isolate and manipulate phonemes, which are the smallest individual sounds in spoken words. Phonemes combine to form syllables and words. For example, the word *cat* consists of three phonemes, /k/ /a/ /t/, and the word *church* consists of three phonemes, /ch/ /ur/ /ch/. In the English language there are between 40 and 44 phonemes.

Instruction in phonemic awareness is most effective when it focuses on both phoneme segmentation and blending. An example of phoneme blending would be to have students listen to a sequence of phonemes and combine them to form a word (e.g., putting the sounds /r/ /a/ /n/ together to make the word *ran*). An example of phoneme segmentation is having students break a word into its separate sounds, saying each individual phoneme (e.g., saying the word *fast* is made up of the sounds /f/ /a/ /s/ /t/). Phonemic awareness instruction helps all students improve their reading, including normally developing readers, children at risk for future reading problems, and readers with disabilities (e.g., National Reading Panel, 2000).

Studies have shown that including phonemic awareness training within a comprehensive program of instruction effectively improves word recognition in poor readers. For example, Lovett and her

colleagues developed a systematic and explicit program for increasing word recognition in disabled readers which includes a component on phonemic awareness; the program is called the Phonological Analysis and Blending/Direct Instruction program (PHAB/DI) (Lovett et al., 2000). In this program, students are initially taught to segment and blend words orally and then in the context of print. This approach was found to improve the phonological awareness and reading skills of severely disabled readers (e.g., Lovett, Lacerenza, Borden, Frijters, Steinback, & De Palma, 2000). In another study, Blachman and her colleagues (2004) incorporated phoneme segmentation and blending into their reading instruction program. Results of this program found that students who received explicit and systematic instruction, in place of the remedial reading instruction provided by the school, showed significantly greater gains than students who continued to receive the remedial reading instruction provided by the school. The positive effects were found for real word and nonword reading, reading rate, passage reading (measuring reading accuracy, rate, and comprehension), and spelling, with results being maintained at a one-year follow-up. Torgesen, Morgan, and Davis (1992) compared the effects of three phonological awareness training programs on word recognition; one program provided explicit instruction on both segmenting and blending, one trained in blending skills alone, and a control group received no phonological awareness training. Results found that students who received both segmenting and blending skills training improved significantly on these skills and showed a positive effect on word recognition. In summary, phonemic awareness instruction has been found to improve word recognition skills in students when incorporated as one part of a larger, systematic word recognition program. In addition to benefiting students with reading disabilities, phonemic awareness instruction has also been shown to be appropriate to the needs of average and gifted students in the early elementary years (e.g., Lovett, et al., 2000).

Phonics

Phonics instruction teaches the relationships between the letters of written language (graphemes) and the individual sounds of spoken language (phonemes) and how these relationships are used to read and write words. In English, there are 26 letters in the alphabet which are used to symbolize between 40 and 44 speech sounds (Vaughn & Linan-Thompson, 2004). Learning to read in English can be particularly challenging, as there is not a one-to-one correspondence between letters and sounds, as is the case in more transparent orthographies, such as in the Italian and Finnish languages.

There are different instructional approaches to phonics, including synthetic phonics and analytic phonics. Synthetic (or explicit) phonics programs teach students to convert letters into sounds and then blend the sounds to form recognizable words. Jolly Phonics, Lindamood Phonemic Sequencing (LiPS) program (formerly called the ADD program, Auditory Discrimination in Depth), the Lippincott program, Open Court, Orton Gillingham, Reading Mastery (also known as Direct Instruction or DISTAR) and Sing Spell Read & Write are all synthetic programs which were reported to be used in schools (National Reading Panel, 2000). In contrast, analytic (or implicit) phonics programs teach students to analyze letter-sound relationships in previously learned words to detect phonetic and orthographic patterns. In comparing synthetic and analytic phonics instruction for students who struggle with reading, as well as for typically developing readers, studies have found that students who received synthetic phonics scored higher on

phonemic awareness and word recognition (for review see Foorman, Francis, Winikates, Mehta, Schatschneider, & Fletcher, 1997).
It has been shown that explicit and systematic phonics instruction produces significant benefits for students from kindergarten through the early elementary years and for students who struggle with reading (National Reading Panel, 2000). Systematic instruction refers to the direct teaching of a set of letter-sound relationships in a clearly defined sequence; to teaching how to use these correspondences to read words; and to providing an abundance of practice at reading words/text containing the taught correspondences. A meta-analysis, which summarized a large volume of research, found that phonics instruction benefited decoding, word reading, text comprehension, and spelling in readers, including those with poor reading skills (Ehri, Nunes, & Stahl, 2001). Lovett and her colleagues (1994) have shown that systematic and explicit phonics, coupled with phonemic awareness, improved the word recognition of children with reading disabilities. Brown and Felton (1990) examined students in grades one and two who struggled with reading and found that students assigned to receive systematic phonics instruction, in comparison to instruction in whole language, demonstrated beneficial results. At the end of first grade, significant differences were found between groups on nonword reading and the ability to spell phonetically regular words. In addition, at the end of grade two, significant differences were found in reading polysyllabic real words and decoding of nonsense words. The study concluded that structured, systematic phonics instruction resulted in more favorable outcomes than a context emphasis approach. Blachman and her colleagues (2004) found that explicit and systematic phonics instruction improved real word and nonword reading, reading rate, passage reading, and spelling of poor readers. These studies are a few examples of the body of research that has demonstrated the significant benefits of explicit and systematic phonics instruction for students who struggle with reading.

Sight Word Recognition

Sight word recognition refers to words that a reader can recognize automatically. Readers do not need to apply strategies to decode these words. Words of high frequency that often appear in students' readings become sight words most readily. The number of words that students who struggle with reading can recognize fluently and easily as sight words is usually quite limited (e.g., Manis, Custodio, & Szeszulski, 1993).

Studies of word recognition instruction often incorporate sight word instruction into their reading programs as a necessary component toward improving the skills of poor readers (e.g., Lovett et al., 2000; Vellutino et al., 1996). Effective sight word instruction for students who struggle with reading involves the introduction of sight words in groups, which are taught to mastery each week and followed by activities, repeated readings, and sentence reading practice using the sight words (e.g., Bryant, Fayne, & Gettinger, 1982; Lovett et al., 2000; Vellutino et al., 1996). Words taught in this manner are often those with high frequency rime patterns; that is, the rime unit appears in many other words (sometimes referred to as a word family). This facilitates the learning of the decoding strategies introduced in the next section. Text is frustrating for a student if they cannot automatically recognize the majority of words on each page. A good rule of thumb is that at least 90-95% of the words on a page should be recognized by sight in order for a student

to read the text without becoming frustrated and discouraged (Duffy, 2003). That means that no more than 5-10% of the words on the page would need to be sounded out.

Higher-Level Word Recognition Strategies

Higher-level word identification strategies have been shown to help facilitate the decoding of unfamiliar words, especially for older children with reading difficulties. Higher-level word identification strategies are individually taught and practiced, with the explicit goal of helping disabled readers use what they know to aid them in decoding unfamiliar words (e.g., Lovett, Lacerenza, & Borden, 2000). Effective application of these strategies depends in part on the students' acquisition of high frequency sight words (Lovett, Lacerenza, & Borden, 2000).

One of the cornerstone studies in the area of higher-level word identification strategies for students who struggle with reading involved the Benchmark Word Identification program (Gaskins, Downer, & Anderson, 1988; Gaskins, Gaskins, & Gaskins, 1991). This program was used for poor readers in grades one through eight and taught students to use known words to decode unknown words, to discriminate structural components of words, to be flexible in pronouncing vowels, and to build up automaticity when decoding words (Gaskins, Downer, & Anderson, 1988). The Word Identification program involved explicit and systematic instruction, modeling, and guided practice (for review of these components of strategy instruction, please refer to Appendix). Students in the Word Identification program received whole-class instruction in higher-level word identification strategies for 15-30 minutes every day (Gaskins, Gaskins, & Gaskins, 1991). The Benchmark Word Identification program is intended to be used in conjunction with a reading program to improve the word recognition of poor readers (Gaskins, Downer, & Anderson, 1988). In addition to positive results for poor readers, studies on the Benchmark School Word Identification program also found that while the decoding program was initially designed for students with reading difficulties, the approach also works well for students without reading difficulties (Gaskins, Gaskins, & Gaskins, 1991).

Lovett and her colleagues extended the work of the Benchmark School and developed an effective reading program for students with reading disabilities that is explicit and systematic, called the Word Identification Strategy Training (WIST) program (e.g., Lovett, Borden, DeLuca, Lacerenza, Benson, & Brackstone, 1994; Lovett, Lacerenza, & Borden, 2000; Lovett, Lacerenza, Borden, Frijters, Steinbach, & De Palma, 2000; Lovett & Steinbach, 1997; Lovett, Steinbach, and Frijters, 2000). The WIST program teaches students how to use four higher-level, metacognitive strategies that focus on using subparts of words they know to decode larger, unknown words. These strategies are individually taught and practiced, along with the specific skills required to implement the strategies successfully. For the first strategy, Word Identification By Analogy (also called Rhyming), students learn to compare an unfamiliar word to a word they already know by comparing to known rhyming words. For the second strategy, Variable Vowel Pronunciations (also called Vowel Alert), students are taught that vowels have multiple pronunciations, which is often determined by the letters surrounding the vowel. In the third strategy, Seek the Part of the Word You Know (also called I Spy), the student is taught to look for small words or word parts that are known when approaching an unfamiliar word. Finally, for the fourth strategy, Peeling Off, students are instructed to identify and segment affixes at the

beginning and end of words, reducing the unfamiliar word to a smaller, more manageable root word. Lovett and her colleagues have accumulated extensive support for their programs. The most effective program for students with reading disabilities was a combination of instruction that focuses on direct instruction in phonological awareness and phonics (i.e., PHAB/DI) and instruction in higher-level decoding strategies (i.e., WIST). These researchers found that this combination significantly improved the reading skills of children with reading disabilities, even more than either program in isolation (Lovett, Lacerenza, and Borden, 2000). In addition, research found positive effects of this program for disabled readers in the later elementary grades (Lovett & Steinbach, 1997) and for students with severe reading disabilities (Lovett, Steinbach, & Frijters., 2000).

Reading Comprehension

Reading comprehension consists of the processes of understanding and constructing conceptual knowledge from a text through cognitive interaction and motivational involvement with the text (Guthrie, Wigfield, & Perencevich, 2004). While comprehension was once thought of as the natural result of decoding plus oral language, comprehension is now viewed as a much more complex process involving experience, knowledge, thinking, and teaching (Fielding and Pearson, 1994). Reading comprehension is perceived as being a complex set of skills that is not fully understood or easily remediated (e.g., Kamps, Abbott, Greenwood, Wills, Veerkamp, & Kaufman, 2008).

Reading comprehension strategies are the techniques readers use to help process a text (McCormick & Waller, 1987). Research in reading comprehension has suggested that while many students may have the ability to understand text, they are inefficient at self-initiating effective strategies (Cross & Paris, 1988; Gersten, Fuchs, Williams, & Baker, 2001; Jitendra, Cole, Hoppes, & Wilson, 1998). Reading comprehension strategies should be introduced and taught individually. In reviewing classroom strategy instruction, it was found that comprehensive introduction of one or a few strategies at a time was recommended in place of less indepth teaching of multiple strategies at the same time (Pressley, Goodchild, Fleet, Zajchowski, & Evans, 1989). Research has shown that teaching several comprehension strategies concurrently during a short time is ineffective (e.g., Dole, Duffy, Roehler, & Pearson, 1991). Once students master the individual strategies, they should then be taught how to combine strategies productively (Guthrie, Wigfield, & Perencevich, 2004). In addition, research examining reading comprehension strategies has found that these should be directly explained, modeled and scaffolded, involve guided practice, and eventually be used independently by the student (Guthrie, Wigfield, & Perencevich, 2004). The goal of this approach is for students to reach independence and use strategies automatically and independently. Pearson and Gallagher (1983) identify four components of strategy instruction called the “Gradual Release of Responsibility Approach”. This approach emphasizes modeling, think alouds, scaffolding, guiding students in small groups, providing large blocks of time for students to read independently, and practice using and applying the strategy. An expanded review of these components can be found in the Appendix.

Guthrie and his colleagues have developed a research-based classroom intervention called Concept-Oriented Reading Instruction (CORI; Guthrie, Wigfield, & Perencevich, 2004). One aspect of this intervention emphasizes effective reading comprehension strategies. Guthrie and his colleagues have provided compelling evidence supporting CORI's effectiveness in improving the reading comprehension of typically developing students and students with reading difficulties (Guthrie, Anderson, Alao, & Rinehart, 1999; Guthrie, McRae, & Klauda, 2007; Guthrie, Wigfield, Barbosa, et al., 2004). Through extensive research, Guthrie and his colleagues identified effective comprehension strategies, including activating background knowledge, questioning, searching for information, summarizing, integrating graphically, structuring story, elaborative interrogation, and question-answer-relations (Guthrie, 2005; Guthrie, Wigfield, & Perencevich, 2004). The CORI program was developed in classrooms in grades three to five and has recently been extended to instruction with adolescents (Guthrie, 2008).

Other studies have also focused on identifying effective evidence-based reading comprehension strategies. After examining over 100,000 studies, the National Reading Panel identified strategies that were best supported by research: comprehension monitoring, cooperative learning, graphic organizers, question generation, story structure, and summarization (National Reading Panel, 2000). Pressley and his colleagues also examined evidence-based reading strategies and included summarization, representational- and mnemonic imagery, story grammar, question generation, and prior knowledge activation strategies as being effective strategies for elementary readers (Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989).

Overall, there are six reading comprehension strategies that have received solid research support as helping to facilitate the understanding of knowledge in poor readers: 1) graphic organizers, 2) story grammar knowledge, 3) question generation, 4) searching for information, 5) summarizations, and 6) activating background knowledge (e.g., Guthrie et al., 2004; National Reading Panel, 2000; Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989). The engaged reader is strategic, builds conceptual knowledge, is motivated to read and learn, and partakes in social activities to achieve learning goals (Guthrie et al., 2004). The focus here is on the strategic aspect of reading comprehension and reading instruction. Within CORI, classroom practices are delineated, which support all aspects of the engaged reader (Guthrie et al., 2004).

Evidence-Based Practices in Reading Instruction

Evidence-based practice refers to the use of intervention strategies programs and procedures that have been rigorously studied and for which there is adequate scientific evidence supporting their effectiveness with a specified population (Justice and Pullen, 2003; Logemann, 2000). Shinn and McConnell (1994) suggested that the use of empirically validated instructional strategies in the classroom can improve the learning of significantly more students. Logemann (2000) argued that the use of procedures for which evidence is questionable or not yet established puts school psychologists and teachers at risk for slowing students' progress in a time that is essential to their development and learning.

Although there is a movement in the field of psychology toward evidence-based or empirically validated techniques (e.g., Levant, 2004), it has been suggested that teachers and school psychologists may not always refer to such when making decisions about students, as there is a tendency to rely on one's personal practice, apart from integrating personal knowledge and research (Justice and Pullen, 2003). For example, in an examination of recommendations made in the area of reading by school psychology students at the Master's level, Crofts (2007) found that a considerable proportion of the psycho-educational reports did not recommend evidence-based practices. To ensure that the interventions delivered to students improve their reading skills, school psychologists and teachers should rely on evidence-based practices.

In recent years, organizations and researchers have undertaken the task of reviewing the research on effective reading instruction; however, none have been found to link the research to curriculum outcomes. For example, the well-known summary of the research on reading instruction, a report of the National Research Council titled Preventing Reading Difficulties in Young Children (Snow, Burns, & Griffin, 1998), examined how to reduce reading difficulties; however, the audience for such volumes is too broad to specifically relate the suggestions to curriculum outcomes. In addition to specifying recommendations concerning evidence-based practices for students who struggle with reading, this booklet also links these recommendations to the Atlantic Canada English language arts curriculum.

Although this booklet offers research-based instructional techniques that have been proven to work in classrooms, studies have found that translating evidence-based practices into actual use in schools has often been an area of limited success (Gersten, Vaughn, Deshler, & Schiller, 1997; Vaughn, Klingner, & Hughes, 2000). Involved in this process is the need to increase awareness and use of evidence-based practices, and, more difficult, finding a way to maintain the sustained use of these practices. Malouf and Schiller (1995) suggested three factors that need to be considered in the application of research-based practices: (a) increasing the knowledge of members of the school team by building onto their existing knowledge base; (b) understanding school team members' attitudes toward research and the manner in which it affects practices; and (c) understanding how the demands of the local context will affect implementation. This booklet summarizes the best strategies for effectively teaching students who struggle with reading based on the findings of a body of research which examined evidenced based practices in reading instruction. Collaboration amongst members of the school team will be the most effective method for introducing and strengthening the use of evidence-based practices in schools.

Part 2: Evidence-Based Recommendations for Supporting Struggling Learners

Word Recognition

In order to increase word reading and spelling abilities, there are four primary areas that should be targeted in a program of instruction. These include phonemic awareness, phonics, sight word recognition, and higher-level strategies for deciphering unknown words in texts. A sample recommendation is given for each individual area, however, all components would be recommended for most students experiencing difficulties in recognizing words accurately and quickly.

Phonemic Awareness

Recommendation:

Brenda's phonemic awareness skills were not adequately developed. This means that Brenda has difficulty identifying and manipulating the individual sounds in spoken words. It is recommended that explicit instruction in phonological awareness be one aspect of a remedial program. Brenda should increase her syllable awareness, so the program could begin targeting onset-rime awareness and move to instruction in segmenting and blending individual sounds (phonemes).

What is it?

Phonemic awareness refers to the ability to identify and manipulate phonemes, which are the smallest individual sounds in spoken words. In the English language there are between 40 and 44 distinct sounds. Instruction in phonemic awareness is most effective when it focuses on explicit teaching in phoneme blending and segmenting. An example of phoneme blending involves having students listen to a sequence of phonemes and combine them to form a word (e.g., "What word do these sounds make when put together? /r/ /a/ /n/" – "ran"). An example of phoneme segmentation is having students break a word into its separate sounds, saying each individual phoneme (e.g., "What sounds is the word fast made up of?" - "/f/ /a/ /s/ /t/"). In addition to explicit and systematic instruction of these skills, some students will need to begin at an easier level, learning how to blend and segment syllables (/pic/ - /ture/) and onset-rimes (/sh/ - /op/).

Instructional approaches:

Explicit and systematic programs, such as Earobics and the Lindamood Phonemic Sequencing (LiPS) program (formerly called the ADD program, Auditory Discrimination in Depth), will be helpful in increasing phonemic awareness. The Earobics program is a research-based program that uses explicit and systematic instruction to build skills in the areas of phonemic awareness and phonics, as well as comprehension skills. Each level of instruction

focuses on recognizing and blending sounds, rhyming, and discriminating phonemes within words. The Lindamood Phonemic Sequencing program is a program that strengthens phonological processing skills. This program provides instruction in the area of phonological awareness and letter-sound correspondences, and has additional components that target comprehension skills. Beginning a program of instruction at a point congruent with a student's current skill level can be helpful; however, a program is most effective if, from that point, it is completed in its entirety; this ensures a systematic and complete approach. It should be noted that only completing small segments of a program will not be effective, unless such segments are used strategically as part of a program of instruction that targets all necessary components in a systematic manner. For example, working on the vowel circle from the LiPS program in isolation will not improve a student's word recognition skills.

How does this recommendation relate to curriculum outcomes?

The importance of phonemic awareness is found throughout the Atlantic Canada English language arts curriculum. For example, in the grades K-3 curriculum, SCO 4.4 for transitional readers emphasizes the importance of using blending as a strategy for decoding words (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998, p.28). In another example, an elaboration of phonological awareness and phonemic awareness is found in the Program Design section of the K-3 curriculum, which offers detailed information on the different phonological skills (syllable awareness, onset-rime awareness, and phonemic awareness) (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998, p.162).

Resources:

- Phonemic Awareness in Young Children: A Classroom Curriculum. (1998). Authors: Marilyn Jager Adams, Barbara R. Foorman, Ingvar Lundberg, & Terri Beeler
  This book applies research-based theory to the classroom by offering activities from simple listening games to more advanced exercises in rhyming, alliteration, and segmentation.
- What Every Teacher Should Know about Phonological Awareness. (2001). Authors: Joseph K. Torgesen and Patricia G. Mathes.
  Website: www.fldoe.org/ese/pdf/phon9872.pdf
  This paper summarizes why phonological awareness is important, why students differ from one another in their ability to acquire it, and how to effectively incorporate it into reading instruction.
- How Now Brown Cow: Phoneme Awareness Activities. (1997). Author: Edwin S. Ellis.
  Website: www.ldonline.org/article/388
  This article contains instructional guidelines regarding activities in onset and rime and phonemic awareness, using explicit and systematic instruction.
- Information on the Earobics program can be found on the Earobics website: http://www.earobics.com/
- Information on Lindamood Phonemic Sequencing can be found on the Lindamood website: http://www.lindamoodbell.com/programs/lips.html

Phonics

Recommendation:

Allen's word recognition skills are not adequately developed. This impedes his ability to comprehend, enjoy, and learn from text. Allen has learned many letter-sound correspondences, but has not completely mastered these connections. As well, Allen is currently not able to use this knowledge to sound out unfamiliar words. Gaining skills in this area will help Allen to successfully decode currently unfamiliar words; each successful decoding trial will, in turn, help more words become sight words for Allen. It is recommended that an explicit and systematic phonics program be used with Allen in order to increase his word recognition skills. Many programs will have a built in initial assessment to determine the appropriate starting point for a given student.

What is it?

Phonics programs teach the relationships between the letters of written language (graphemes) and the individual sounds of spoken language (phonemes) and how these are used to read and write words. There are 26 letters in the alphabet which are used to symbolize between 40 and 44 speech sounds. Students learn grapheme-phoneme correspondences in a systematic order, learn how to use these in sounding out unknown words, and practice decoding words and connected text with the correspondences they are currently mastering. All material to be learned is taught within a mastery framework; that is, instruction and cumulative reviews occur until a student has completely mastered a given skill. Mastery is achieved when a student is consistently accurate with a given skill and has achieved automaticity.

Instructional approaches:

As reviewed in Part 1 of this booklet, research has clearly demonstrated that explicit and systematic phonics is the most effective instruction for all students (e.g., National Reading Panel, 2000; Ehri, Nunes, & Stahl, 2001; Brown & Felton, 1990). Explicit and systematic phonics programs move from instruction in the smallest units to that with larger units. For example, in sections that concentrate on patterns of letter-sound correspondences within words, students might first learn to recognize and manipulate individual consonant letter patterns, (e.g., to change *ran* to *rat*), then vowel letter patterns (e.g., change *ran* to *run*), and then syllables (change *spin* to *spindle*). Phonics programs need to be systematic, meaning that instruction should be organized to introduce letter-sound relationships and the use of these relationships for reading words in a logical instructional sequence. Jolly Phonics and the Lindamood Phonemic Sequencing (LiPS) program (formerly called the ADD program, Auditory Discrimination in Depth) are both programs that introduce the content and skills in a logical sequence that is most conducive to mastery learning. To help evaluate a phonics program, the checklist found at the National Right to Read Foundation can be used: http://www.nrrf.org/phonics_checklist.htm

How does this recommendation relate to curriculum outcomes?

In the Atlantic Canada English language arts curriculum, the knowledge and skills gained from phonics programs is referred to as the "graphophonic cueing system". This system is consistently included as part of the fourth general curriculum outcome in all grades, from grade 1 through 6. For example, in the K-3 document, SCO 4.4 for transitional readers states that "students will be expected to use and integrate, with support, the graphophonic cueing system and a range of strategies to construct meaning" (New Brunswick Department of Education

Curriculum Development Branch, 1998, p.27). In the Grade 4-6 document, SCO 4.4 states that "students will be expected to use the graphophonic cueing system and a variety of strategies to construct meaning" (Nova Scotia Department of Education and Culture, 1998, p.40). The Program Design section of the curriculum document addresses the graphophonic cueing system as being critical in the integration of knowledge when reading (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998, p.162; Nova Scotia Department of Education and Culture, 1998, p.117).

In addition to the references made to the graphophonic cueing system, phonics is also referred to in SCO 4.5 for emergent readers, which states that "students are expected to begin to use the knowledge of sound-symbol relationships" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.27).

Resources:

- Information on the Jolly Phonics program can be found at: http://www.jollylearning.co.uk/jp.htm, a division of the Jolly Learning website (http://www.jollylearning.co.uk/)
- National Right to Read Foundation (www.nrrf.org). This is a comprehensive resource for phonics products, research on phonics, and information concerning phonics advocacy.
- A "Phonics Primer" can be found online (www.nrrf.org/PhonicsPrimer.pdf). The Primer lists the 44 individual sounds in the English language and the most frequent spelling patterns associated with each sound. The primer illustrates the level of systematic and explicit phonics instruction required to help improve the reading skills of students who struggle to acquire reading skills.
- A checklist that can be used when evaluating the adequacy of a phonics program, particularly with respect to the explicit and systematic requirements of effective phonics programs, can be found on the website of the National Right to Read Foundation: http://www.nrrf.org/phonics_checklist.htm

Sight Word

Recommendation:

Kim's word recognition skills are not well developed and she does not automatically recognize many high frequency words automatically. One focus of instruction should be teaching Kim a bank of high frequency words and words containing rimes that have large word families (e.g.,cat).

What is it?

Sight word recognition refers to words that are recognized automatically; readers do not need to apply strategies to decode these words. Words that students are introduced to and practice on a consistent basis and words that most frequently appear in texts become sight words most readily.

Instructional approaches:

1. Some programs with students who struggle with reading recommend introducing about five to ten high frequency words on individual flash cards each week (e.g., Lovett,

Lacerenza, & Borden, 2000; Lovett, Steinbach, et al., 2000). Students need to be taught the word and then engage in consistent practice with each new word until a word is recognized consistently and automatically over time.

2. Students can read the flash cards in a small group setting. If an error is made, the student is corrected immediately. Once a word is consistently read correctly by all students in the group for a period of time, it can be dropped from the daily list and reviewed less frequently.

3. When words become consistently recognized, they are used in sentences that the students then read and practice. Sentences should start out with a small number of words and then contain more and more of the taught words. Students practice at least two sentences that contain four different training words until they can read them accurately and automatically (e.g., Bryant, Fayne, & Gettinger, 1982).

4. As students learn words, Word Walls and Word Banks posted around the classroom can help to keep previously learned words in mind and aid in maintaining automatic recognition of taught words. Activities involving Word Banks and Word Walls provide students with the tools and practice for learning the correct spellings of high-frequency words and applying them in their daily writing (Cunningham & Hall, 2002).

How does this recommendation relate to curriculum outcomes?

Recognition of sight words is included as part of the fourth general curriculum outcome in the Atlantic Canada English language arts curriculum. For example, SCO 4.5 for emergent readers states that "students are expected to begin to recognize some high frequency sight words" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.28). In addition, SCO 4.4 for transitional readers states that "students are expected to recognize a wide variety of sight words" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.28). The importance of sight words is also described in the program design and components section of the curriculum document (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998, p.166).

Resources:

- The Dolch list contains 220 high frequency words found in beginning reading programs. The Dolch Kit website (www.theschoolbell.com/Links/Dolch/Dolch.html) compiles the 220 words in groups of ten in order of frequency.
- The following website provides Dolch Sight Words according to grade level: http://gemini.es.brevard.k12.fl.us/sheppard/reading/dolch.html
- A list of the 120 keywords used in the research of Lovett and her colleagues can be found in the following article: Lovett, M. W., Lacerenza, L., & Borden, S. L. (2000). Putting struggling readers on the PHAST track: A program to integrate phonological and strategy-based remedial instruction and maximize outcomes. *Journal of Learning Disabilities, 33*(5), 458-476. These words are taught as recognition needed for the higher-level strategies.

Higher-Level Word Identification Strategies

Recommendation:

Rod's word recognition skills were not well developed, and he is thus not able to keep up with the texts being used in his grade 6 classroom. Alongside phonics instruction, teaching Rod strategies for decomposing and recognizing longer, unknown words in text will increase his ability to independently read words. Each time Rod is able to use newly learned strategies to successfully decode a word will move him toward recognizing the same word quicker on subsequent trials and to becoming more competent with the individual strategies. Building up a sight word vocabulary of words that have the most frequent rime units needs to happen prior to or concurrently with instruction in these strategies.

The strategies recommended here are taken from the work of Maureen Lovett and her colleagues (e.g., Lovett, Borden, DeLuca, Lacerenza, Benson, & Brackstone, 1994; Lovett, Lacerenza, & Borden, 2000; Lovett, Lacerenza, Borden, Frijters, Steinbach, & De Palma, 2000; Lovett & Steinbach, 1997; Lovett, Steinbach, and Frijters, 2000). Although each strategy is taught in isolation, Rod will need to be taught to judge which strategy is appropriate for which type of word, how to use the strategies in combination, and the self-talk and self-monitoring that will enable him to use the strategies successfully.

Rhyming: Rod would be taught to compare the word body of an unfamiliar word to that of a word he already knows (i.e., one of the high frequency sight words he has learned). For example, the words *and*, along with the word *look*, could be used to decode the unknown word *handbook*. The Rhyming strategy needs to be used in combination with the sight word instruction which taught Rod the most frequent words and word rimes/bodies.

Vowel alert: Rod would be taught that vowels often have multiple pronunciations, which is often determined by the letters surrounding the vowel. Rod learns to try different vowel pronunciations in a new word, starting with the most frequently occurring pronunciations in the English language and then attempting less frequent pronunciations, until the sound results in a real, known word. For example, in the word "find", Rod would first try the short *i* vowel sound. He would decide if the resulting pronunciation is a word that he knows, and if not, he would then attempt the word using the long *i* vowel sound. This attempt would be successful.

I Spy: Rod would be instructed to look for smaller words or word parts that he knows when attempting to read a longer, unfamiliar word. This strategy is most effective with compound words. For example, Rod might identify *base* and *ball* when attempting to decode *baseball*.

Peeling off: Rod would be instructed to identify and segment affixes at the beginning of words (e.g., *un-, re-, mis*) and at the end of words (e.g., *-ment, -ing, -tion, -ful*), in order to reduce an unfamiliar word to a smaller, more manageable root word. He then applies one of the other three strategies to decode the root word. Next, Rod blends together the prefix, root, and suffix. For example, "un" and "ing" would be peeled off in the process of reading the word "unpacking".

What is it?

Higher-level word identification strategies have been shown to help students decode longer, unfamiliar words, and may be especially useful for older students with reading difficulties. Higher-level word identification strategies are individually taught and practiced, with the explicit goal of helping disabled readers use what they do know to aid them in decoding unfamiliar words.

Instructional approaches:

These strategies are individually taught and practiced, along with the specific skills required to implement the strategies successfully.

Rhyming:

1. The first step is for students to be taught about recognizing the rime unit or body of a word. One method of instruction involves students completing a worksheet activity in which they circle the vowel and underline the spelling pattern in a series of words, which has within it pairs of rhyming words. Students can then pair up words to match the rhyming words. This will help students identify rime units in multi-syllabic words. Examples of worksheets can be found in the PHAST article (Lovett, Lacerenza, & Borden, 2000). In addition, free, printable worksheets for rhyming can be found at: ww.tlsbooks.com/rhymingwords2.pdf and www.theteacherscorner.net/printable-worksheets/make-your-own/match-up/match-up.php?list=1499

2. As the skill level increases, the number of spelling patterns represented on the worksheets can then be increased.

3. As students become familiar with rhyming words and identifying the rimes in words, they should be posted on a word wall in rhyming word families.

4. Students then need to practice locating the rime units in multisyllabic words and identifying the proper pronunciation by referencing their own growing knowledge of the pronunciation of these letter patterns or to the word wall.

Think Aloud example (reading the word chest):

"I don't know this word, but I'll use the Rhyming strategy to help me figure it out. I see *est*, like in *best*. So if I know *best,* I know *chest*!"

***Vowel Alert*:**

1. It is explained to the student that vowels have multiple pronunciations, which is often determined by the letters surrounding the vowel. The student is then taught these multiple pronunciations for each vowel, and taught about which pronunciations are most likely (based on frequency counts in the English language). For example, for the word *find*, the student would first try the short vowel sound *i*, decide that using that particular vowel sound does not yield a known word, and then attempt pronouncing the word with the long vowel sound for *i*.

2. Students are also taught the pronunciations for vowel combinations. Worksheets can then be used in exercises that focus the student on vowel combinations (one or two can be introduced at a time). Students are taught to underline the vowels and to try all pronunciations to determine which yields a real word. Examples of worksheets can be found in the PHAST article (Lovett, Lacerenza, & Borden, 2000). Free, printable worksheets for vowels can be found at: www.free-phonics-worksheets.com/html/phonics_lesson_extensions.html

Think Aloud example (reading the word tower):

"I don't know this word, so I will try the Vowel Alert strategy to help me. I'll try both sounds for *o-w*. First I'll try the sound *o-w* makes in *glow – ow.* Now I will sound it out to see if it makes a real word – *tower.* No, that doesn't make a word that I know. Now I will try the sound *o-w* makes in *plow* and see if that makes a real word – *tower*. Yes, that makes sense! Now I know the word – *tower*!"

I Spy:

1. Students are taught to look for smaller, more familiar parts of longer words when attempting to decode unknown words. This strategy is most effective with compound words. For example, students might identify *bath* and *room* when attempting to decode the larger word *bathroom*. To help identify the smaller words in compound words, students are instructed to circle the known words within the larger, unknown words.

2. To facilitate learning this strategy, worksheets are given to students which contain lists of compound words. Examples of worksheets can be found in the PHAST article (Lovett, Lacerenza, & Borden, 2000). Worksheets can also be found online, which are free to print: www.enchantedlearning.com/grammar/compoundwords/

3. As the skill level increases, lists can include words that are not necessarily compound words, but are longer words that contain smaller words. For example, students might identify *bad* and *ring* when attempting to decode *badgering*.

Think Aloud example (football):

"Here is a long word that I do not know. I Spy *foot*, so I'll put a circle around *foot.* Now I Spy *ball*, so I will put a circle around that. So the whole word is *football*!"

***Peeling Off*:**

1. It is explained to the student that affixes can be peeled off words to find the root word, which can helpful when decoding longer, unknown words. To become more familiar with affixes, prefixes and suffixes are introduced to students and practiced at a rate of one or two new affixes per day. As students learn affixes, a word bank of known prefixes and suffixes should be listed in the classroom and at the top of worksheets.

2. Students are taught to identify and circle prefixes and suffixes to identify and single out the root word. For example, *un* and *ing* would be circled for the word *unpacking*.

3. Once the root word is isolated, students then use one of the other practiced higher-level strategies to decode the root word.

4. When the root word is identified, the students are then taught to blend together the prefix, root, and suffix to read the larger word.

5. To practice locating and peeling off affixes, students are given worksheets containing a list of words made of affixes. Examples of worksheets can be found in the PHAST article (Lovett, Lacerenza, & Borden, 2000). Free, printable worksheets can also be found at: www.firstschoolyears.com/literacy/word/other/prefixes/prefixes.htm

Think Aloud example (uncomfortable):

"I don't know this word, but I see some affixes, so I'll use the Peeling Off strategy. First, I'll peel off the prefix *un-* and the suffix *–able.* Now I'll figure out the root word. Wait! I see another prefix *com-* so I'll peel that off too! Not I'll try Rhyming on *f-o-r-t.* I know *short* so I know *fort*! Now I'll put the affixes back on to find the longer word. This is *fort*, so this is *comfort*, so this must be *uncomfortable*. That's a word I know!"

How does these recommendations relate to curriculum outcomes?

In the Atlantic Canada English language arts curriculum, there are numerous references to the importance of using higher-level strategies, especially in the fourth general curriculum outcome. The strategies included in this section will help to improve students' performance with respect to all of these outcomes.

SCO 4.4 for transitional readers states that "students are expected to word solve by using analogy with known words" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.28). This will be enhanced by using the Rhyming strategy.

The Vowel Alert strategy also helps students meet curriculum outcomes, including SCO 4.4 for transitional readers, which states that "students are expected to use various cueing systems, including predicting what sounds right" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.27).

The I Spy strategy will enhance SCO 4.4 listed for transitional readers, which states that "students are expected to word solve by using knowledge of compound words" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.28) and "use a variety of self-correcting strategies (trying to find a little word in the big word)" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.28). This strategy will also increase the proficiency of the GCO 4 for grades 4 and 5, which state that students will be expected to use "compound words" (Nova Scotia Department of Education and Culture, 1998, p.40).

Teaching the Peeling Off strategy also impacts SCO 4.4 for transitional readers, which states that "students are expected to word solve by using knowledge of affixes and root words" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.28). This strategy is also beneficial for the GCO 4 for grades 4 and 5, which states that students will be expected to use "structural analysis to identify roots, prefixes and suffixes" (Nova Scotia Department of Education and Culture, 1998, p.40, p.60).

Resources:

- Information on the higher-level reading strategies can be found in the following article: Lovett, M. W., Lacerenza, L., & Borden, S. L. (2000). Putting struggling readers on the PHAST track: A program to integrate phonological and strategy-based remedial instruction and maximize outcomes. *Journal of Learning Disabilities, 33*(5), 458-476. This article provides detailed information, including illustrations and examples of worksheets, on each of the four higher-level strategies.

Comprehension

Recommendation:

Lee demonstrated a weakness on tests of reading comprehension, consistent with teacher reports of difficulties understanding and retaining information from classroom texts. It is recommended that Lee be taught the reading comprehension strategies that have been shown to be most effective at improving students' understanding and learning from text. Modeling, think alouds, scaffolding and guided practice are important components of strategy instruction. The teacher explains what the strategy is and how it will help Lee's comprehension, and then models the strategy while verbalizing internal dialogue, across different samples of text. Following the modeling activity, the student engages in structured practices of applying the strategy, with enough support from the teacher that the student experiences success and becomes aware of the benefits from applying the strategy. The teacher will want to cycle through these activities, each time handing over more and more responsibility to the student, until the student is able to demonstrate correct judgment of when to apply the strategy and effective strategy implementation.

The following six comprehension strategies will help improve Lee's understanding and learning from text. Although instruction is initially separated for each strategy, a higher-level goal for later instruction is the ability to use multiple strategies in an integrated manner. Direct instruction is needed in combining strategies in a productive manner; these generalizations will not be made automatically by most students. The majority of these strategies and instructional approaches are taken from Motivating Reading Comprehension: Concept Oriented Reading Instruction (Guthrie et al., 2004) and practitioners are encouraged to read this book for a complete context for strategy instruction, as well as examples and elaboration of the strategies.

1. **Use of graphic organizers:** This strategy entails Lee constructing a visual-spatial representation of the material in texts in order to help organize the information into meaningful patterns and relationships. These graphic organizers frequently take the form of drawings, charts, maps, outlines, and Venn diagrams. Graphic organizers will help facilitate Lee's understanding of the text through visual depictions of key terms and concepts and the relationships among these. For example, Lee might learn to identify a main idea or theme that is addressed throughout a text or section of a text, and then generate supporting details into categories/concepts in the form of a web.

2. **Use of story grammar knowledge:** Story grammar knowledge refers to the Lee's understanding of the setting, plot, characters, motives, themes, and their relationships in

texts. The strategy consists of analyzing narrative texts using this story grammar knowledge towards a better or deeper understanding of the text. Starting with a "beginner's level" of instruction, Lee would first be taught the general structure of a story; for example, that the beginning contains information about the time of the story, where it took place, and the central characters, followed by an initiating event which sets the goal or problem, followed by attempts to achieve the goal or solve the problem, and concluding with attaining the goal. Lee can be taught to then ask questions while reading a text, in order to facilitate using his knowledge of story grammar. For example, he could be taught to ask and answer the following five questions when analyzing a story: 1) Who is the main character? 2) Where and when did the story take place? 3) What did the main characters do? 4) How did the story end, and 5) How did the main character feel? Lee can use a story map in the initial instruction to provide a concrete representation of the relevant information in the text. Use of story grammar knowledge will help increase understanding of narrative texts. Once Lee masters the basic strategy, he can be taught to analyze texts for more complex relationships amongst the story elements.

3. **Question generation:** This strategy involves Lee asking himself questions about the text prior to reading. These questions can help provide goals and motivation for reading and can help students feel ownership of the process. Lee would first be taught to peruse a text and integrate this information with prior knowledge of the area in order to generate questions related to central themes in the text. A first goal would be for Lee's questions to be simple but complete and address a central theme of the text. Over time, with modeling, further direct instruction and scaffolded practice, the goal would become that Lee generates questions about the relationship(s) between core concepts in the text.

4. **Searching for information:** This strategy refers to the activity of Lee finding a subset of information in the total text by developing goals, selecting particular sections of text, extracting information accurately, combining new and old information, and continuing until goals are fulfilled. The purpose of this strategy is not to read the entire text, but to read and learn from only the most relevant portions of the text. Lee is taught to locate relevant sections of text by using the table of contents, index, pictures, topic sentences, and other text features that enable Lee to search effectively.

5. **Summarizing during reading:** This strategy involves the process of forming an accurate, abstract representation of the text after reading all or substantial portions of the material. Lee would be taught to identify the main, higher-level themes and concepts that serve to integrate other information/ideas and to summarize these into an appropriate representation, such as a summary paragraph. Lee would be instructed in the following steps. First, to identify important concepts in the paragraph, often by locating key words within the text. Second, to identify key supporting information/evidence, consisting of words or phrases. Next, to identify and omit less relevant information and details. Finally, to compose a brief statement (one to four sentences) representing the summary. Given the difficultly of summarization, instruction on this strategy may need to cycle through the steps of explicit explanation of what it is and how it works, modeling, scaffolded practice and independent practice many times. Summarizing, like many of the strategies explained here, will need to be taught separately for different genres of text.

6. **Activating background knowledge:** This strategy involves Lee perusing text elements and relating information from these to what he already knows about a topic. Using this strategy before reading a text makes it more likely that old information will be elaborated and/or changed with the information in an expository text; for narrative texts, Lee will be more likely to use his own knowledge and experience to understand and build representations of characters and events in stories. Lee might initially work toward recalling relevant experiences and knowledge about the central concepts in a text and make predictions about what he is about to read. A later goal would be for Lee to use background knowledge to think about possible connections and relationship amongst central themes in a text. Once strategies are learned and mastered separately, Lee can be taught to combine the strategies of activating background knowledge with question generation toward a very productive combination of strategies.

What strategy instruction is and instructional approaches.

Reading comprehension refers to understanding and learning from text which requires active and motivated engagement with texts (e.g., Guthrie, Wigfield, & Perencevich, 2004). Reading comprehension strategies are cognitive tools that students use toward developing deeper understanding of texts, building rich mental models of central themes or concepts in texts, and advancing conceptual knowledge.

The strategies outlined are best taught individually until mastery has occurred. Direct instructional methods are needed in order for strategy instruction to be successful. While students achieving at grade-level may learn a particular strategy in as little as 2-4 lessons, students who are struggling with reading comprehension may benefit from 8- 12 lessons on a particular strategy. This can be evaluated separately for an individual student. Steps that may be useful in strategy instruction include: explaining what the strategy is and how it can improve comprehension; teacher modeling of the strategy while verbalizing the thought process during strategy use (the verbalization would include an acknowledgement of how the strategy helped or what the reader was able to accomplish by using the strategy); providing concrete tools to help the student recall the strategy (e.g., key words or mnemonics written on a paper) while the student and teacher use the strategy together for a text or short section of text; continued joint practice with the teacher slowly removing her/his input and support; and ongoing practice with feedback from the teacher. The cycle may need to be completed separately for strategies which need to be altered for different genres of text. In summary, instruction in the reading comprehension strategies needs to be systematic, explicit, and involve the gradual release of responsibility (for elaboration, see Appendix).

How do these recommendations relate to curriculum outcomes?

Reading comprehension is a focus throughout the Atlantic Canada English language arts curriculum. The program design section of the curriculum document discusses the importance of the ability for students to be able to derive meaning from text. GCO 4, found in the Atlantic Canada English language arts curriculum documents (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998; Nova Scotia Department of Education and Culture, 1998), states that students are expected to select, read, and view with understanding a range of texts, interpret information using a variety of strategies, and be able to respond critically

to a range of texts. The reading comprehension strategies included in this booklet will help to improve students' performance with respect to all of these outcomes.

References are also made in the Atlantic Canada English language arts curriculum to students' use of several individual strategies included in this booklet. For example, the Program Design and Components section of the curriculum documents have specific sections pertaining to graphic organizers (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998, p.183-186) and activating background knowledge (e.g., Nova Scotia Department of Education and Culture, 1998, p.120).

A specific curriculum outcome for the sixth general curriculum outcome will be enhanced by activating background knowledge and story grammar knowledge. SCO 6.1 states that "students are expected to be able to describe personal reactions to text, including reflecting on characters and events of text" (Nova Scotia Department of Education and Culture, 1998, p.44).

Question generation is referred to in several general curriculum outcomes in the grade 4-6 curriculum document, including SCO 5.1, which states that "students will be expected to answer questions by seeking information from a variety of texts" (Nova Scotia Department of Education and Culture, 1998, p.42). Together with the activating background knowledge strategy, question generation will also enhance SCO 7.1, which states that "students will be expected to be able to use background knowledge to question information presented in texts" (Nova Scotia Department of Education and Culture, 1998, p.46). In the K-3 curriculum, teaching the question generation strategy will directly impact SCO 5.1 for early readers, which states that "students are expected to generate questions to guide research" (New Brunswick Department of Education Curriculum Development Branch, 1998, p. 30), and SCO 5.1 for transitional readers, which states that "students are expected to be able to ask questions of text" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.29).

Use of the searching for information strategy will also enhance students' ability to meet SCO 5.1, which states that students are expected to "answer questions by seeking information from a variety of texts" (Nova Scotia Department of Education and Culture, 1998, p.42). In regards to the K-3 document, the question generation and searching for information strategies will also enhance student's ability to meet SCO 5.1 for transitional readers, which states that students are expected to be able to "answer their own questions by seeking information from a variety of texts" (e.g., New Brunswick Department of Education Curriculum Development Branch, 1998, p.30).

Several strategies, including searching for information and summarization, will help students meet the specific curriculum outcomes, including SCO 4.3, the ability to "use pictures and illustrations, word structures, and text features to locate topics and verify their understanding of information, and use features of written text to determine content, locate topics, and obtain information" (Nova Scotia Department of Education and Culture, 1998, p.40). In the K-3 document, SCO 4.4 for early readers states that students are "expected to be able to use features of written text to determine content, locate topics, and obtain information" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.27) and SCO 5.1 states that transitional readers are "expected to be able to answer their own questions by seeking information from a variety of texts" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.30).

Finally, teaching students the activating background knowledge strategy will help them to meet the expectation referred to in SCO 7.1, which states that "students are expected to use background knowledge to question information presented in texts and to help make connections

to texts" (Nova Scotia Department of Education and Culture, 1998, p.46). In addition, SCO 4.4 for transitional readers states that "students are expected to be able to make connections between what they read and their own experiences and knowledge" (New Brunswick Department of Education Curriculum Development Branch, 1998, p.29).

Resources:

- Information on reading comprehension strategies can be found on the CORI website: www.cori.umd.edu/overview/goals/reading.php
- Motivating Reading Comprehension: Concept-Oriented Reading Instruction. (2004). Editors: John T. Guthrie, Allan Wigfield, & Kathleen C. Perencevich

  This book outlines Concept Oriented Reading Instruction. This approach focuses on classroom contexts and instruction that foster and support strategy use and conceptual knowledge gains in reading, as well as children's motivations to read, and the social interactions of readers. This book will elaborate on the strategies and strategy instruction presented in this booklet. This includes sample vignettes of classrooms and instruction, as well as bench marks or goals for strategy development.
- 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. Washington, DC: U.S. Government Printing Office.

  The National Reading Panel (NRP) reviewed a comprehensive body of research-based knowledge on reading instruction that focused primarily on elementary reading. The panel investigated how instruction in phonemic awareness, phonics, and fluency impacts children's early reading development and achievement in school settings.

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Appendix

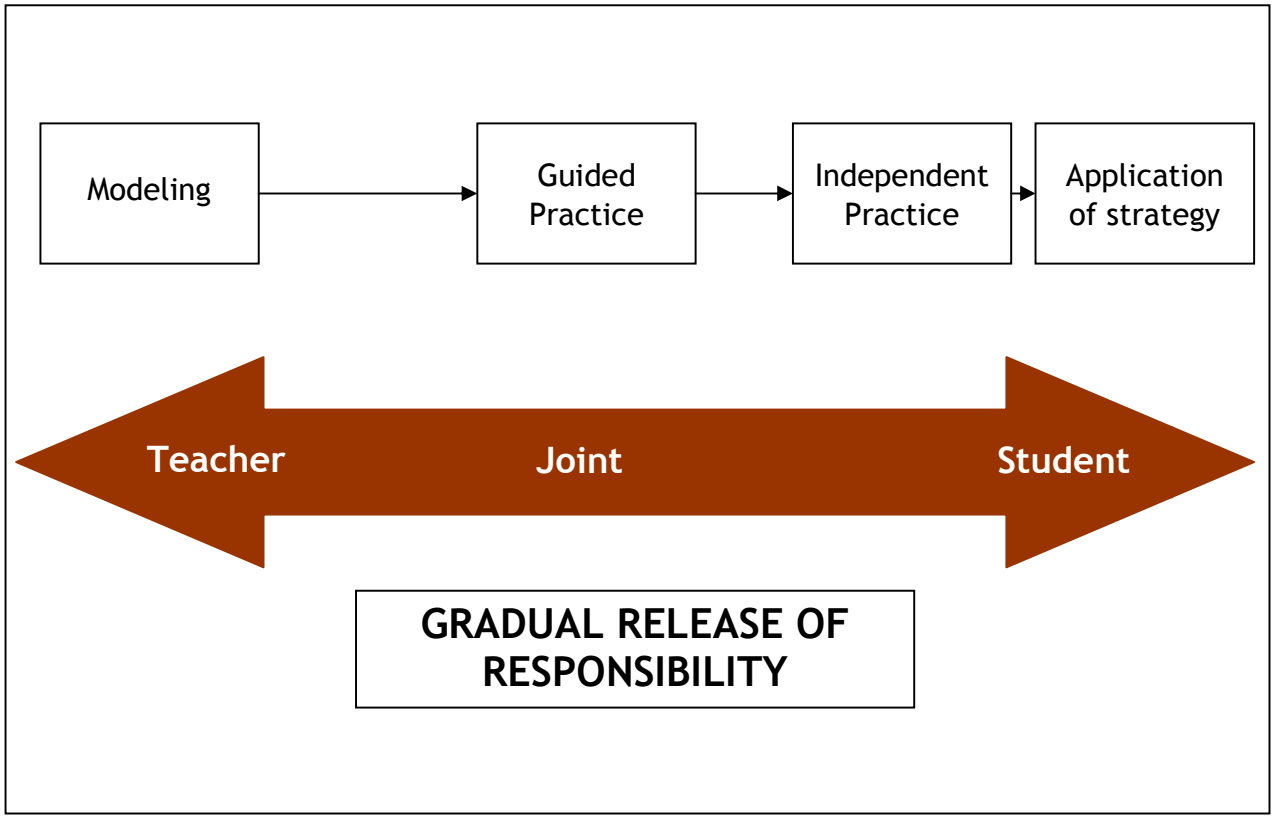
The Gradual Release of Responsibility

The manner in which students are taught is as important as the material being taught. Pearson and Gallagher (1983) identified four components of strategy instruction called the "Gradual Release of Responsibility Approach". This approach emphasizes modeling, think alouds, scaffolding, guiding students in small groups, providing large blocks of time for students to read independently, and practice using and applying the strategy. Research examining reading comprehension strategies has found that reading comprehension instruction should be directly explained, modeled and scaffolded, involve guided practice, and eventually be used independently by the student (Guthrie, Wigfield, & Perencevich, 2004). The goal of this approach is for students to reach independence and use strategies automatically and independently.

The four-stage model of explicit reading instruction includes:

1.) Teacher Modeling - The teacher explains the strategy to the students and demonstrates how to apply the strategy successfully. The teacher uses think alouds to model the mental processes used when reading. Students watch while the teacher explains what, why, and when to use the strategy.
2.) Guided Practice – After explicitly modeling the strategy, the teacher provides opportunities for students to try the strategy and gradually gives the student more responsibility for completing the task on their own. The teacher scaffolds the students' attempts and supports student thinking, while giving feedback during discussions. The teacher observes, provides feedback, and helps students in small groups, as needed.
3.) Independent practice – After working with the teacher and with other students, the students try to apply the strategy on their own. The students receive regular feedback from the teacher and other students.
4.) Application of the strategy in real reading situations – When students have a clear understanding of a strategy, they apply the strategy to a new genre or format of text. Students demonstrate the effective understanding and application of strategies by using them in more difficult text. The teacher continues to observe and assess.

Modeling has been shown to be a powerful instructional technique (De Corte, Verschaffel, & Van De Ven, 2001). In modeling, the teacher explicitly demonstrates to the students how to use a particular strategy with a specific text. Modeling is often used during shared reading. Modeling can be used during shared reading to focus on reading comprehension strategies such as activating background knowledge, summarizing, predicting, clarifying, questioning, visualizing, monitoring, and connecting (Fisher, Frey, & Lapp, 2008). Regardless of the strategy being modeled, modeling must be followed by opportunities to practice and apply skills (Fisher, Frey, & Lapp, 2008).



Think Alouds are a way of modeling the thinking process that goes on while reading. Hall and Myers (1998) suggest that thinking aloud while modeling is important, so the teacher can externalize for students the strategic activities and processes that usually occur internally. By thinking aloud, teachers can model reading strategies to students and demonstrate the different processes involved in reading (Fisher, Flood, Lapp, Frey, 2004).

According to Wilhelm (2001), the steps involved in the think aloud process in normally achieving students include the following: a) choose a short section of text; b) select an appropriate strategy; c) state the purpose for choosing that particular strategy; d) read the text aloud to students and model the chosen strategy as you read; e) have students annotate the text; f) brainstorm cues and strategies used; g) teach students to generalize the strategies; and h) reinforce the think-aloud with follow-up lessons. To adapt these strategies for students who struggle with reading, Migyanka and colleagues (2005) recommended choosing a strategy that will fit the struggling students' ability level and needs; model the think-aloud process while students listen; model the think-aloud process and have students help out; have one student engage in the think-aloud process in a large group while the teacher and other students monitor and help; have students demonstrate think-alouds in small groups while the teacher and other students monitor and help; and finally, have students perform think-alouds individually and in writing, and then compare their responses with others.

Scaffolds are often used immediately following modeling. Scaffolding refers to supported learning, where both the teacher and students are co-participants in a learning activity (Guthrie, Wigfield, & Perencevich, 2004). In the beginning, the teacher performs most of the activity, while the student follows along. Scaffolds serve as aids during the initial learning of complex skills or cognitive strategies and are gradually removed as the student becomes more proficient in using the strategy (Rosenshine, Meister, & Chapman, 1996). As the student gains confidence in using the strategy, the teacher reduces the scaffold and has the student perform more and more of the strategy on his own. The teacher provides the student with more freedom and more opportunities for using the strategy.

For example, an teacher may begin scaffolding for the use of graphic organizers by providing the student with a diagram and showing the student how to fill in the chart. Later in the instruction, the student may fill out the diagram on his own, with some assistance from the teacher. Eventually, the student will be able to fill in the chart on his own, without assistance. A high level of scaffolding for reading comprehension strategies is represented by a high level of teacher direction and prompting, while a low level of scaffolding is displayed when the student performs the activity mostly on their own.

Guided practice involves the teacher providing extended practice as the students gain competence in using a strategy. Guided reading is a teaching approach used with all readers, struggling or independent, that has three fundamental purposes: to meet the varying instructional needs of all the students in the classroom, enabling them to greatly expand their reading powers; to teach students to read increasingly difficult texts with understanding and fluency; to construct meaning while using problem-solving strategies to figure out unfamiliar words that deal with complex sentence structures, and understand concepts or ideas not previously encountered (Iaquinta, 2006). Guided reading requires students to read the selected text to themselves first and to identify (highlight) unknown words or phrases, then apply reading strategies as they read the text aloud in pairs or in a group (Malik, 1996). Short, Kane, and Peeling (2000) described guided reading as opportunities that allow the teacher to model and support the use of cues and self-monitoring reading strategies, which may include the use of pictures to help construct meaning, making predictions, rereading, segmenting and blending phonemes, and finding familiar word chunks to decode words.

Guided reading has become one of the most important reading instructional practices (Fawson & Reutzel, 2000). Guided reading usually involves small groups of students who are at a similar place in their reading development (Iaquinta, 2006). The role of the teacher is essential to guided reading. Teachers must know how to prompt and guide students as they work to build this self extending system of reading (Iaquinta, 2006). The teacher guides students as they read a passage and can observe the students' strengths and weaknesses (Malik, 1996). Ongoing observation of students, combined with systematic assessment, enable teachers to draw together groups of students who fit a particular instructional profile (Iaquinta, 2006).

In a more simplistic model, strategy instruction can also be understood in a Teacher Does/Student Does approach:

1.) Teacher Does/Students Watch
2.) Teacher Does/Students Help ⟶ Students Do/Teacher Helps
3.) Students Do/Teacher Watches
4.) Students Do Independently

Applied to a literacy model, the following figure explains the Teacher Does/Student Does approach in relation to reading and writing (adapted from Ritterskamp & Singleton, 2001):