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Effectiveness Of The Infusion Of Reading Component Model Based Remedial Reading Instruction On The Reading Achievement Of Students In Learning Disabilities And Title I Remedial Reading Programs

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EFFECTIVENESS OF THE INFUSION OF READING COMPONENT MODEL BASED REMEDIAL READING INSTRUCTION ON THE READING ACHIEVEMENT OF STUDENTS IN LEARNING DISABILITIES AND TITLE I REMEDIAL READING PROGRAMS

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by

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ABSTRACT

The present study tested the effectiveness of the infusion of remedial reading instruction, derived from the Reading Component Model, on the reading achievement of children in learning disabilities and Title I classrooms. The Reading Component Model is based on the premise that the reading process is composed of two major components, word recognition and comprehension, and poor functioning of either component can affect reading performance. Remedial instruction based on the component model focuses and tailors instruction on the weak component. In contrast, the discrepancy model, a model that is predominant in U.S. schools, classifies students into two categories: those with learning disabilities and those without learning disabilities, but does not, however, prescribe any particular instructional remediation.

Twelve teachers from grades 2 through 6 provided the names of 151 children in their classrooms who were experiencing difficulty in reading. Complete evaluation data were collected from 130 students using differential diagnostic procedures designed to locate and identify the weak component that may cause the suspected deficit. Results indicated that 43% of the poor readers from both treatment and control groups had weakness in decoding skills only, 33% had weakness in both decoding and comprehension, 0% had weakness in comprehension skills only, and 24% showed no significant deficiency in either decoding or comprehension.

Students with a weakness in decoding skills received only 20 hours of word recognition treatment that emphasized phoneme awareness training, and students with weakness in both decoding and comprehension skills received 10 hours of phoneme awareness training and 10 hours of comprehension strategy instruction. Results indicated

that treatment groups irrespective of category did not make significant statistically positive gains when compared with the control groups. However, anecdotal information from teachers indicated positive outcomes for the treatment groups. Recommendations are made for multifaceted evaluation measures and a longer intervention.

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Spring has come to the Appalachia

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Chapter 1

INTRODUCTION

Purpose of the Study

The present study was designed to test the effectiveness of the infusion of remedial reading instruction, derived from the Reading Component Model, on the reading achievement of children in learning disabilities and Title I classrooms. The Reading Component Model is based on the premise that reading process is made up of two major components, word recognition and comprehension and that poor functioning of either component can affect reading performance. Remedial instruction based on the component model focuses on the weak area of the student, word recognition or comprehension or a combination of the two, and tailors reading instruction according to the child's need. In contrast, the discrepancy model, which is implemented currently in a majority of schools in the United States, first classifies students with reading problems into two categories: those with learning disabilities (LD, hereafter) and those without learning disabilities (non-LD, hereafter). This classification is based on a discrepancy between reading achievement score and IQ score. The discrepancy-based categorization places students who are identified as having LD in special programs, but does not prescribe any particular instructional procedure. Children with LD receive instruction in a

special setting called "resource rooms" or they may be taught in the regular classroom. Consequently, the remediation that students with LD receive varies from school to school and teacher to teacher. Studies that have examined the outcome of such discrepancy-based categorization and instruction have not reported positive achievement outcomes (Share, McGee, McKenzie, Williams, & Silva, 1987; Vaughn, Moody, & Schumm. 1998; Hoff, 1997).

Poor readers who do not show a significant discrepancy between achievement and IQ scores may be placed in Title I programs, provided they meet certain social, economic, and cultural criteria established by the school system. These students may be instructed in resource rooms or mainstreamed in the regular classroom. Title I programs also do not follow uniform teaching procedures and do not target instruction at the cause of the student's reading problem. In contrast to the Learning Disability and Title I programs, the Reading Component Model proposes that remedial instruction should be targeted at the weak component or components of reading. Numerous studies demonstrate that reading is composed of two major components: word recognition and comprehension. Components are independent processes, and can, therefore, develop at different rates and reach different skill levels. Since a weak component can interfere with the acquisition of reading skills, three kinds of poor readers can be expected to exist: (1) those with poor word recognition skills but adequate comprehension, (2) those with poor comprehension skills but adequate word recognition, and (3) those who have deficits in both word recognition and comprehension. Remedial techniques based on the Reading Component Model recommend that students who have a deficit in only word recognition receive instruction in decoding, students who have a deficit only in comprehension

receive instruction in comprehension, and students who have a deficit in both components receive instruction in both decoding and comprehension. Remedial reading techniques derived from the Reading Component Model utilize specific diagnostic procedures that result in specific remedial reading strategies.

The present study was designed to test the effectiveness of the infusion of a total of 20 hours of component-based remedial reading instruction on the reading achievement of students in LD and Title I classrooms.

The present study was conducted during the 1997 - 1998 academic year and involved 146 students from grades 2 – 6, enrolled in LD or Title I programs. Students in the comparison groups received the typically delivered LD or Title I instruction from their classroom teachers. A pre-study survey of teachers indicated that the teachers in both LD and Title I groups provided instruction that was a combination of code-based (i.e., phonics) and meaning-based (i.e., whole language) methods. For the purpose of the present study, this instructional combination is termed "eclectic." The twenty hours of reading component-based remedial instruction the students in the treatment group received replaced 20 hours of the typically delivered LD or Title I instruction. Specially trained graduate students provided the component model-based remedial reading instruction. Students in both treatment and control groups were administered pretests in order to ascertain their level of reading achievement and identify their weak component. Posttests were administered toward the end of the academic year to evaluate the progress or lack of progress students had made.

The following hypotheses were set up to test the effectiveness of reading component-based remedial instruction.

Hypothesis 1: Among elementary school children identified by their teachers as poor readers, there exist four kinds of poor readers: (1) those with a weakness only in word recognition skills, (2) those with a weakness only in comprehension skills and (3) those with a weakness in both word recognition and comprehension skills, and (4) those with no identifiable weakness in word recognition and comprehension skills but whose reading problems may be ascribed to poor motivation, attention deficit, environmental constraints or a combination of these or other factors.

Hypothesis 2: Students whose reading problems are caused only by poor word recognition skills will benefit significantly more from remedial methods that aim at improving decoding skills than from remedial approaches that do not exclusively address decoding skills.

Hypothesis 3: Students whose reading problems are caused only by poor comprehension skills will benefit significantly more from remedial methods that aim at improving comprehension skills than from remedial approaches that do not exclusively address comprehension skills.

Hypothesis 4: Students whose reading problems are caused by both poor word recognition and poor comprehension skills will benefit from remedial methods that aim at improving decoding and comprehension skills significantly more than from remedial approaches that do not exclusively address these two areas of weakness.

Chapter 2

REVIEW OF RELATED LITERATURE AND RESEARCH

The effectiveness of diagnostic and remedial reading methods as currently practiced in American schools within the framework of special education and Title I programs has recently been questioned (Aaron, 1997; Aaron & Joshi, 1992; Siegel, 1989). Traditionally, in the US, poor readers are classified into those with learning disabilities and those without learning disabilities. Categorization of poor readers into these LD and non-LD groups is based on a discrepancy between their IQ scores and reading achievement scores. Children who have an IQ score in the average range or higher but have a reading achievement score that is significantly lower than the IQ are identified as having LD (U.S. Department of Education, 1977; Chalfant, 1985; Mercer, 1987; Valus, 1986a). Children who have a below-average IQ score and a correspondingly below-average reading score are identified as not having a learning disability. The discrepancy model is based on the assumption that the etiology of the reading problem of these two groups of poor readers (LD and non-LD) is different and, consequently, they are to be taught differently. The legal and fiscal initiatives for the Discrepancy Model are derived from Public Law 94-142, the Education of All Handicapped Children Act of 1975.

In contrast to LD, which implies a disability, some non-LD children may be placed in Title I (or recently, Chapter I) programs. These children are considered to experience reading problems because of presumed disadvantages, usually socio-economic and cultural in nature. The initiative for the Title I program comes from the "Title I of the Elementary and Secondary Education Act of 1965" and more recently from "Chapter I of the Educational Consolidation and Improvement Act of 1980." Generally speaking, poor readers who are not identified as having LD may be placed in Title I programs, provided the school has a Title I program, and these children meet the criteria established by the school system. Such criteria include economic, social, and academic needs. Poor readers who qualify neither for LD programs nor Title I programs may not receive special educational attention and are usually retained within the regular classroom.

The Discrepancy Model-Based Program

Over the past two decades, a number of educators have expressed dissatisfaction with the discrepancy model. Recently, the effectiveness of educational practice based on the discrepancy between IQ and reading achievement scores has been challenged (Siegel, 1989; Aaron, 1997). There are several reasons for the dissatisfaction with the Discrepancy Model.

First, investigators have noted that there is no evidence to show that poor readers with LD and without LD differ from each other in cognitive processes that are causally linked to reading (Foorman, Francis, Fletcher, & Lynn, 1996; Stanovich & Siegel, 1994).

Second, the discrepancy model is based on the unsupported assumption that the correlation between IQ and reading scores is high and therefore, IQ can predict reading potential. Support for this assumption, however, is weak. For example, the correlation

between IQ and reading achievement seldom exceeds .50, indicating that IQ scores account for no more than 25% of the variance seen in the reading achievement of children from elementary grades (Stanovich, Cunningham, & Feeman, 1984). The IQ score therefore, cannot be considered a potent predictor of reading achievement.

Third, the Discrepancy Model assumes a one-way causal relationship between IQ and reading achievement, with IQ playing a causal role in reading performance. There is, however, substantial evidence to show that the IQ-reading achievement relationship is reciprocal in the sense that reading skill can also influence IQ scores. This is indicated by the frequently reported decline in the scores of poor readers, particularly in their verbal IQ scores, because poor readers read less than good readers and fail to build a substantial body of vocabulary and information. In contrast, good readers tend to build a large vocabulary and thereby show gains in verbal IQ scores. This phenomenon has been described by Stanovich (1986) as the "Matthew Effect," from the gospel verse "To every one who has will more be given, and he will have abundance; but from him who has not, even what he has will be taken away" (Matthew 25:29). This phenomenon has been documented for both English and Dutch-speaking children (Stanovich, 1986; von den Bos, 1989). Conversely, it has also been noted that poor readers who show improvement in reading achievement also show a corresponding gain in their verbal IQ scores (Bishop & Butterworth, 1980; Share, McGee, & Silva, 1989).

Fourth, two procedures, the standard score method and the regression method, are usually adopted to compute the extent of the discrepancy between expected reading achievement projected from the IQ score and actual achievement. Both of these methods for calculating discrepancy scores to separate LD children from non-LD poor readers are

unreliable (Alberg, 1985). For instance, the standard score method identifies fewer children, but overidentifies bright children; on the other hand the regression method provides false positives leading to over-identification. Researchers often favor the regression method because it is statistically sophisticated, but pragmatically it is the most difficult to implement. Additionally, the rigors of adherence to a particular discrepancy formula vary within and among school systems, and from state to state within the US (Siegel, 1989). Despite these issues, discrepancy formulas continue to be used by school systems "despite the lack of empirical evidence of their utility and despite a preponderance of evidence that many are even statistically flawed" (Brown & Bryant, 1985, p. 37).

Fifth, a more serious criticism of the discrepancy model is that it does not provide guidelines for remedial instruction (Siegel, 1989; Aaron & Joshi, 1992). It has also led many teachers to view instruction and assessment as separate activities, which has led to altogether too rare and often haphazard integration of the two activities (Sliggins and Conklin, 1992).

Finally, another challenge to the Discrepancy Model comes from the questionable validity of the theoretical foundations on which the Discrepancy Model is based. The Discrepancy Model of LD and its implementation are based on two assumptions: first, there are qualitative differences in the cognitive make-up of poor readers with LD and poor readers without LD; and second, the instructional procedures required by children with LD are different from the procedures that will benefit poor readers without LD.

With regard to the cognitive difference assumption, little evidence exists to support the notion that poor readers classified as LD or non-LD are different from each other in their cognitive makeup. Numerous studies support this conclusion. For instance,

Ysseldyke, Algozzine, Shinn, & McGue (1982) compared one group of children identified as having LD with a second group of students identified as non-LD poor readers on 49 psychometric measures. These researchers found that there was an overlap of scores that ranged from 82 - 99% on the psychometric measures with an average overlap of 96%. Algozzine & Ysseldyke (1983) have criticized the discrepancy formula for its lack of utility in clearly differentiating between students labeled LD and non-LD. A meta-analysis of studies using the Wechsler Intelligence Scale for Children (WISC) pattern profiles of school-identified children with LD indicated that "the WISC LD profile reveals little that is extraordinary and appears not unlike that found for the average non-LD slow student" (Kavale & Forness (1994, p. 22). McFadden (1990) reports similar results in a study that compared several samples of Canadian children with LD, identified on the basis of IQ-achievement discrepancy, with children with low IQs who exhibited patterns similar to those of children identified as having LD. Francis, Shaywitz, Steubing, Shaywitz, & Fletcher (1994), examined the growth curves of 32 LD poor readers, 37 non-LD poor readers, and 334 normal readers in grades 3 - 9 who were identified on the basis of the discrepancy model. The data showed that poor readers did not differ from each other as a function of age, nor were intraindividual changes in reading skills any different in the two groups of poor readers.

The validity of the second premise on which the concept of LD is based, namely, that children with LD improve their reading skills when different instructional strategies are used, is also questionable. Epps and Tindal (1987) addressed the question of whether or not LD students fare better when instructed in special education resource rooms than when taught in regular education classrooms. According to these investigators, little

evidence exists to support the notion that children placed in LD resource rooms improve in reading achievement. Recently, Vaughn, Moody, Schumm (1998) examined reading instruction and the outcome provided for students with LD in the resource room. Of the fourteen special education teachers involved in the study, most identified whole language as the primary approach used to teach reading; word recognition or comprehension skills were not addressed; and little differentiated instruction was provided despite a wide range of reading abilities (3 to 5 grade levels) represented. Results from the Stanford Achievement Test (SAT) for total reading indicated that relative to their peers, the students in the LD resource room showed little or no growth in reading. In another study, Share, McGee, McKenzie, Williams, & Silva (1987) could find no difference in the educational progress made by LD and non-LD poor readers. These authors concluded that there is no evidence to support the presumed difference between poor readers with LD and poor readers without LD based on patterns of reading deficits, etiologies, and prognosis. These investigators suggest that "it is best to treat underachievement as a continuum" (p. 42).

In a doctoral dissertation, Wleklinski (1993) examined instructional procedures and their outcomes based on the Discrepancy Model. He examined the effect of LD services provided over a three-year period on word recognition and reading comprehension skills to LD students identified on the basis of the discrepancy model. Reading achievement scores of 410 students from elementary grades in 19 different schools were examined. Wleklinski found that the reading achievement scores of these students did not increase significantly over a three-year period. The pretest mean standard score for these children on the Wide Range Achievement Tests (WRAT) word recognition

subtest was 75.14 whereas the posttest mean standard score was 74.98. The pretest mean standard score for reading comprehension of a subgroup of 114 children was 79.55 whereas the posttest standard score of these children 3 years later was 81.25. The difference was not statistically significant. Further analysis of the data indicated no significant change in students' reading scores that could be attributed to the method of reading instruction (code-based, meaning-based, or mixed) or type of placement (resource room or supplementary instruction). Progress in reading comprehension was negatively but significantly correlated with the amount of time these students spent in resource rooms, suggesting that the resource room placement had detrimental effects. In summary, few studies indicate that poor readers with LD, as diagnosed by a discrepancy formula and instructed in resource rooms, respond differently to special methods of instruction compared to poor readers without LD (Aaron, 1997).

Nature and Treatment Outcomes of Remediation Based on the Discrepancy-Based Model

Studies that look at the outcome of discrepancy-based reading instruction were discussed earlier. To reiterate the futility of this approach, a few additional studies are described in this section. Since the IQ-reading discrepancy-based diagnosis provides no guidance for instructional procedures, there is little consensus as to the remedial method/s to be followed in teaching students with reading problems. An additional complication results from the numerous choices of instructional strategies available for teachers to choose from. A survey of the methodological content of teacher education programs by Pugach and Whitten (1987) noted that the most frequently taught methods were, in order of frequency, "direct instruction," "curriculum based instruction," "task analysis," "applied

behavior analysis," "metacognitive strategy training," "cooperative learning," "remedial methods for attention deficits," "psycholinguistic methods," "psychotherapeutic interventions," and "visual perceptual methods." The efficacy of several of these instructional methods remains unproven. Furthermore, teachers may use strategies regardless of the strengths and weaknesses of students. The instructional approaches based on the Discrepancy Model can, therefore, be described as undifferentiated. Pugach et al., (1987) concluded that what distinguishes special education teachers is their knowledge of the law and the processes of identification, placement, and consultation, none of which is directly relevant to reading instruction.

Studies that have examined the instructional practices provided to poor readers in special education settings have yielded disappointing results. Schumm, Vaughn, and Elbaum (1996) observed 29 third-grade teachers during reading instruction. Analysis of the observation revealed that instruction was provided primarily in large groups and undifferentiated. Understandably, this study also indicated that overall, students in special education made less than a 1-year gain in reading. Two other studies conducted prior to this one also showed that undifferentiated instruction is the norm, regardless of the nature of the reading problem (McIntosh, Vaughn, Schumm, Haager, & Lee, 1993; Zigmond & Baker, 1990).

Information regarding the nature of remedial reading instruction provided by fourteen special education elementary teachers to 77 LD students was collected by Vaughn, Moody, & Schumm (1998). All fourteen of the teachers taught children in resource rooms; eleven teachers instructed the children in large groups; only one used small group instruction (4 - 5 students), and two teachers taught reading by dividing the

students into two similar-ability groups with approximately 4 students in each group. Nine of the teachers provided no individualized work. In these classrooms all students, regardless of ability, were asked to read the same book and complete the same activities. The overall approach to reading instruction was identified by ten of the teachers as whole language instruction or instruction based on individual learning styles. The other four teachers reported that they used whole language but indicated that they used other instructional methods also. None of the teachers was confident that whole language was adequate to teach reading to students with disabilities. More than half of the teachers commented regarding the importance of attending to the learning styles of the students. Three teachers provided ongoing word recognition or decoding instruction, and though others voiced the importance of phonics, they did not indicate that they used it in a systematic fashion. As to comprehension, eleven teachers taught reading comprehension by either reading the story aloud to the students and asking questions, or having the group take turns reading the story followed by the teacher asking questions. Observations indicated that most questions asked were either factual or literal. Of the 41 teacher observations, only one record showed any comprehension strategy being taught to the students. Scores from the Stanford Achievement Test (SAT) total reading were available for 76% of the students. Prior to the start of this study, the Total Reading Percentile scores were a mean of 15.56 (SD = 11.78), and for the same students at the end of study year the reading scores were a mean of 14.19 (SD = 10.87). The results indicated that the students showed no growth in reading. These disappointing results may be due to the belief that LD students have some form of unique disability which leads LD teachers to follow an assortment of instructional strategies, ranging from perceptual training to

incidental phonics. Additional possible explanations for this lack of reading progress include motivational and emotional problems and environmental limitations in addition to insufficiencies surrounding the IQ-reading discrepancy based diagnosis (McKinney, 1988).

Title I-Based Remedial Programs

In most schools, the LD program and the Title I program are administered separately. As noted earlier, poor readers who cannot be classified as having LD may be included in Title I programs provided the school has a Title I program and the children meet the Title I qualifications. School systems follow their own criteria in making placement decisions. These criteria are usually based on economic, cultural, and social "need", and teacher availability factors. It is to be noted also, that not all schools qualify for Title I programs depending on the financial status of the school district. Furthermore, no generally accepted set of instructional policies governs the conduct and instruction of children placed in Title I programs. In some schools, children in Title I programs are pulled out of the regular classroom and instructed in small groups; in other schools, they are mainstreamed and taught in the regular classroom, usually with the help of teachers' aides. Depending on their educational philosophy and training, Title I teachers, just as LD teachers do, follow a variety of instructional strategies (Haynes & Jenkins, 1986; Ysseldyke, Thurlow, Mecklenburg, & Graden, 1984).

Several review studies have expressed skepticism about the efficacy of the Title I programs (Allington & McGill-Franzen, 1988; Kennedy, Birmam, & Demaline, 1986; Slavin, 1987), though the studies that have examined the effectiveness of Title I programs are limited in number (Lipsky & Gartner, 1989). In one study, Jarvis-Janik (1993)

compared the reading achievement of students attending a Chapter I pullout program in Chicago public schools with that of poor readers from a regular reading program. Reading achievement scores were obtained by administering the Iowa Tests of Basic Skills. No significant difference was found in the reading achievement of both groups. In a survey of 77 reading specialists, classroom teachers, and principals, Bean, Trovato, and Hamilton (1995) found that even though teachers were positive about Chapter I programs, they were concerned about the development of programs that are incongruent with the classroom programs and the lack of effectiveness of the program in meeting individual needs. Hoff (1997) summarized the results of several evaluative surveys of Chapter I programs. A government-supported evaluation project of Chapter I began tracking 27,000 students in grades 1, 3, and 7 and tested them each year for four years. Abt Associates Inc. of Bethesda MD, conducted the study under a contract from the Department of Education. The preliminary report appeared in 1993 and the most recent one in 1997. Both reports concluded that "the program did nothing to help participating students narrow the achievement gap that existed before they entered Chapter I. The achievement gap between Chapter 1 participants and their peers stayed about the same over the course of the four-year study. Comparisons between Chapter I students and a control group with similar economic and educational backgrounds showed that participation in Chapter I resulted in no improvement in their achievement levels" (p. 29).

An analysis of the outcomes of special education and recommendations made by Allington and McGill-Franzen a few years earlier (1988) could be useful in explaining the disappointing outcome of Chapter I programs. The findings and recommendations were based on the observation of children from five school districts. First, much of the

instruction was undifferentiated. That is, the teaching method was not tailored to the needs of individual students. The result was that teachers had routines that they applied regardless of the students' level of reading and curricular needs. Similar observations have been made by Frantz (1987), Haynes & Jenkins (1986) and Morsink, Soar, & Thomas (1986). Many classroom and specialist teachers lack the expertise necessary to deliver high quality reading instruction to low-achieving students (Allington & McGill-Franzen, 1989). The recommendations made by these authors include: a) elimination of all categorical programs (such as LD and Title I) and merging all instructional efforts aimed at low-achieving students regardless of current categorical labels, b) transformation of specialist teachers into classroom teachers who would then be held accountable for the learning of all students, and c) the establishment of close curricular coordination between specialist teachers and classroom teachers.

The Reading Component Model-Based Program

In contrast to the Discrepancy Model, an alternative model the Reading Component Model, was utilized in the present study. Under the Reading Component Model, the proximal cause of the reading problem is identified first and then remedial efforts are targeted at the source of the reading problem. Identification of the cause of the reading problem can be accomplished by detecting the component of the reading process that is not functioning optimally and then focusing remedial instruction at the weak component. In the Reading Component-based remediation model, identifying the weak

component is the first step in remediation. The next step is to provide remediation specifically designed to strengthen the weak component.

Empirical Support for the Component Nature of Reading

The Reading Component Model is based on the proposition that the reading process is not a unitary operation, but is composed of identifiable independent processes. A component is defined as a mental process that transforms a sensory input into a mental representation, transforms one mental representation into another, or translates a mental representation into a motor output. More importantly, a component is an elementary information process that is independent of other processes (Sternberg, 1985). The independence of a process and its dissociability from other processes determine whether or not a process can be considered a component (Carr, Brown, Vavrus, & Evans, 1990). When these criteria are applied to the reading process, at least two components, "word recognition and comprehension" are known to make up the components. In beginning readers, word recognition is accomplished by decoding the printed word into its phonological form. Once decoding skill is mastered word recognition is automatized and is accomplished by the process known as sight word reading. Decoding refers to the ability to convert the written word into its phonological or semantic representation, either overtly or covertly. Beginning readers rely on decoding as the primary strategy for recognizing the written word. Subsequently, by about third grade, mastery of decoding skill and reading experience enable children to acquire sight vocabulary and thus become proficient readers. In the present study, decoding was the component of interest because a large number of poor readers have yet to become sight word readers. Comprehension refers to the ability

to extract meaning from written or oral language and, therefore, refers to both reading comprehension and listening comprehension. The observation that the correlation between reading comprehension and listening comprehension can be as high as 0.82 (Palmer, McCleod, Hunt, & Davidson, 1985) leads to the conclusion that comprehension is a generic process that is common to both reading and listening. Support for the Reading Component Model and the dissociability of word recognition and comprehension skills comes from developmental psychology, cognitive psychology, neuropsychology, and genetic studies. Examples from these different disciplines are reviewed below.

Developmental Psychology. Developmental dyslexia is a reading disorder found in individuals who have average or above-average listening comprehension and intelligence, but have a deficit in decoding skills. In contrast, hyperlexia refers to an extreme condition wherein the child can decode the written language well, but experiences difficulty comprehending it (Aaron, Franz, & Manges, 1990; Healy, 1982). A non-pathological or milder version of hyperlexia is when a child can decode reasonably well, but comprehends much less well. In 1990, Carr and Levy reported that 25% of poor readers can decode written passages fairly well, but cannot comprehend what they read. In a British study, Oakhill and Garnham (1988) found that 10% of the children in primary grades were adequate decoders but poor comprehenders. In another British study, Stothard and Hulme (1992) identified 14 out of a total of 147 children as having difficulty in comprehending written language but not in decoding it. These studies show that word recognition and comprehension are dissociable.

Cognitive Psychology. In a study of college students, Palmer, McCleod, Hunt, and Davidson (1985) concluded that the speed with which words were named and

comprehended to be distinct abilities. Based on a factor analytic study of 12 children, Carr, Brown, Vavrus, and Evans (1990) concluded that comprehension and word recognition are dissociable processes and can, therefore, be considered major reading components.

Neuropsychology. Neuropsychological studies of acquired reading disabilities also indicate that comprehension and word recognition processes can be independently affected (Marshall & Newcombe, 1973). For instance, neurological patients with "deep dyslexia" are characterized by an inability to read aloud words correctly even though their comprehension of these words remains more or less normal. For instance, patients would read aloud words such as *"dad"* as "father" and *"garden"* as "flower" indicating that they could comprehend much better than they could decode. Marshall et al. (1973) also report that, in contrast, some patients show the opposite pattern of performance. That is, they could decode words accurately and mechanically, but show no signs of comprehension. For instance, they would read the word *"sale"* as "Sally"; when asked for meaning they would say "It is the name of a girl." This disorder is referred to as "surface dyslexia" and, along with the syndrome of deep dyslexia lend further support to the dissociable nature of word recognition and comprehension.

Genetic Studies. In a study involving 64 pairs of identical monozygotic twins and 55 pairs of fraternal dizygotic twins, where one twin in each pair had a reading disability, DeFries, Fulker, and LaBuda (1987) found significant heritability for word recognition, spelling, and WISC-R Digit-Span but not for reading comprehension. Commenting on this study, Pennington and Smith (1988) concluded that in dyslexia, single-word reading, spelling, and digit span are genetically influenced but not comprehension. Behavior-genetic analyses

conducted by Olson, Forsberg, Wise, and Rice (1994) have indicated that the heritability of phonological skill is about .75.

These studies provide theoretical support for the Reading Component Model. The dissociability of decoding and comprehension from each other provides an empirical basis for the Reading Component Model.

The Nature of the Components of Reading

The Decoding Component

Decoding skill is the conversion of graphemes into their corresponding phonemes, and is the predominant strategy used by children when they learn to read. Once decoding becomes an automatized skill, printed words are read as sight words. The decoding stage is when children learn to read; sight word reading on the other hand, marks the stage in which children read to learn. However, sight word reading skill appears to be built on decoding skills (Ehri & Saltmarsh, 1995; Aaron, 1997). A decoding deficiency marked by poor phonological processes has been documented to be a major cause of reading disability in the English language as well as in several other European languages (Bradley & Bryant, 1985, in English; Cossu, Shankweiler, Liberman, Tola, & Katz, 1988, in Italian; Lundberg, Frost, & Peterson, 1988, in Danish).

It is believed that a precursor to decoding skill is phonological awareness, even though the relationship between the two may be reciprocal. Phonological awareness refers to the sensitivity that the spoken word consists of sound segments. It is considered to be a skill that facilitates the development of knowledge of grapheme-phoneme correspondence. Phonological awareness has attracted a good deal of research attention since it has been

found to be a good predictor of reading achievement for beginning readers (Alegria, Pignot & Morais, 1982; Lundberg, Olofson & Wall, 1980; Mann & Liberman, 1984; Stanovich, Cunningham & Cramer, 1984).

Several other research studies have also identified a strong association between phoneme awareness and beginning reading skills (Juel, 1991; Liberman & Shankweiler, 1979; Rosner, 1974). The importance of phonological awareness in learning to read was documented as early as 1974, when Liberman, Shankweiler, Fischer, and Carter found that only 17% of kindergartners showed evidence of phoneme awareness. According to Juel (1989), in order to read proficiently, children should have the following skills or competencies: (1) knowing that words are composed of letters of the alphabet; (2) phonemic awareness; and (3) cryptanalytic intent (knowing that there is a relationship between the printed letters and sounds). The findings that phonological awareness training can promote reading skills in beginning readers have further underscored the importance of phoneme awareness to reading (Adams, 1990; Ball & Bachman, 1988; Bradley & Bryant, 1985; Byrne & Barnsley, 1995; Felton, 1993; Felton & Pepper, 1995; Torgesen, Wagner, & Rashotte, 1997).

The Comprehension Component

As noted earlier, comprehension is a generic term for the cognitive process that enables one to derive meaning from language, written or spoken. Furthermore, reading and listening comprehension appear to be mediated by the same cognitive mechanisms (Townsend, Carrithers, & Bever, 1987). This is supported by the high degree of correlation between reading and listening comprehension (Royer, Kulhavy, Lee, & Peterson, 1986), with coefficients ranging from .6 to .9. Consequently, reading

comprehension can be predicted with reasonable accuracy by a listening comprehension measure (Palmer et al., 1985). An inference drawn from this relationship is that if there is a discrepancy between reading comprehension and listening comprehension, where listening comprehension is average or above average, but reading comprehension is lower than average, the cause of the reading difficulties must be poor decoding skill.

The Reading Component Model provides a framework for implementing a differential diagnostic procedure for identifying the primary cause of reading difficulties of the cognitive nature. The differential diagnostic procedure is based on the assumption that cognitive functioning is limited by the weakest component. Weakness in any of the components could, therefore, result in three kinds of poor readers: (1) readers with word recognition deficits only, (2) readers with comprehension deficits only, and (3) readers with deficits in both word recognition and comprehension.

Descriptions of the Three Categories of Poor Readers

Poor readers with word recognition deficits but adequate comprehension skill. As noted earlier, poor readers with word recognition deficits but adequate comprehension skills are usually described in the research literature as having dyslexia or specific reading disability. The profile of this type of poor reader is characterized by an average to above-average listening comprehension but below-average word attack/decoding skill. The suboptimal decoding skills invariably depress reading comprehension. For example, a student who has a standard score of 110 on a test of listening comprehension but a standard score of 82 on a test of decoding is likely to obtain a score of 85 or so on a test of reading comprehension. About 30 to 40% of poor readers fall into this category.

Poor readers with comprehension deficits but adequate decoding skill. These poor readers display a profile characterized by poor listening and poor reading comprehension skills, but average to above-average decoding skill. Hyperlexia represents an extreme, but pathological version of this profile. As noted earlier, the incidence of poor readers with adequate decoding skill but a deficit in comprehension has been reported to be about 15% of the total population of poor readers as indicated by research studies (Stothard et al., 1992; Stothard, 1994; Yuill & Oakhill, 1991). A poor reader with a reading comprehension score of 80, a listening comprehension score of 82, but a decoding score of 100 would fit this category.

Readers with deficits in both decoding and comprehension. A large number of poor readers have deficits in both decoding and comprehension skills. These poor readers are sometimes referred to as "garden variety poor readers" (Gough & Tunmer, 1986). They display a reading profile characterized by below average listening and reading comprehension and an equally low decoding skill. About 50 – 60% of poor readers fall into this category.

Nature and Treatment Outcomes Based on Instruction Focused on Reading Components

In contrast to the LD and Title I studies, a number of studies that have investigated the effect of focusing remediation on individual components of reading have reported encouraging results. Many studies have investigated the outcome of phoneme awareness instruction; several other studies have examined the effect of decoding instruction; numerous studies have tested the outcome of targeting instruction on comprehension only. A selection of these studies is reviewed in this section.

Reading Component-Based Instruction: Phoneme Awareness Training

Numerous research studies indicate that phonological awareness is effective in promoting the reading skills of beginning readers. In a British study, Bradley and Bryant (1985) examined the effectiveness of phoneme awareness training with 65 six-year-old children, divided into two experimental and two control groups. Children in one of the experimental groups received training in sound categorization which was carried out by teaching first alliteration and rhyming skills, and then creating phoneme awareness with the help of pictures of objects (e.g., "in what way do these words sound alike: *cat, car, cut; cat, rat, hat*?" Answer: sounds of the beginning or ending letters). Children in the second experimental group received the above training in addition to practice in constructing the words with plastic letters. Children in the two control groups received either concept categorization tasks or no training. Concept categorization for the control group involved teaching of concepts (e.g., "in what way are these words alike: *bat, cat, rat*?" Answer: these are animals). The training was given one session per week for a period of two years. At the end of the training period, the children who received phonological training obtained higher scores on standardized tests of reading and spelling than control subjects. Children in experimental group II did better than children in experimental group I. These advantages persisted over a period of five years at which time these children were retested. In a study of the effectiveness of phoneme awareness, Ball and Blachman (1991) randomly assigned 90 kindergarten students to one of three conditions: (a) a phoneme awareness group that received training in segmenting words into phonemes along with training in sound-letter correspondences; (b) a group that received training in sound-letter association only, and (c) a control group that received no

special instruction. After 7 weeks of training, it was noted that the phoneme awareness group performed significantly better on measures of reading and spelling than either of the other two groups.

Positive results of phoneme awareness training have been reported in other languages also. In a study carried out in Danish schools by Lundberg, Frost, & Peterson (1988), preschool children were given auditory training which included exercises such as listening to nursery rhymes, clapping hands in harmony with the phonemes in words, and identifying initial and final phonemes in words. These investigators found a positive and significant effect of this training on the reading and spelling achievement of these children when evaluated in the second grade. In Norway, Lie (1991) documented the progress of 200 children from the beginning of Grade 1 through to the end of Grade 2. One experimental group of children received phoneme identification training; another experimental group of children received phoneme segmentation training; and children in the control group looked at pictures and carried on discussions concerning those pictures. At the end of the experimental period, the two groups of children who had received phoneme awareness training scored significantly higher in reading and spelling than children from the control group; students of lower ability profited the most from the phonological training.

In 1993, Felton assessed the impact of beginning reading instruction on children in kindergarten who were considered to be at risk for reading disabilities. One group of children was given code-based instruction that emphasized sound-symbol relationships as well as basic phoneme segmentation. The second group of children received context-based instruction that emphasized meaning and context. At the end of first and second grades,

children who had received code-based instruction performed significantly better on all measures of reading and spelling than those who received context-based instruction.

Evidence for the advantage of remedial reading based on phoneme awareness also comes from a small-scale quasi-experimental study that involved a total of 16 children (Aaron & Boyd, 1995). The study involved teaching decoding skills to 4 small groups of children from grades 1 through 5 starting with the creation of phoneme awareness. The remedial methods for this program were adapted from the Auditory Discrimination in Depth program (Lindamood & Lindamood, 1975). These children received training in two 90-minute sessions per week, for a period of one semester. The teacher-pupil ratio was about 1:2. Analysis of the differences between pre and posttest performances as measured by the Woodcock Reading Mastery Tests (1987) indicated that about 70% of the children made significant progress in decoding and, surprisingly, in comprehension skills also. Almost identical results were obtained in all four groups of children, indicating that the results are replicable. The combined results of the remedial instruction on the four groups were: pre-test decoding score 81.3; posttest decoding score 92.1; pre-test comprehension score 86.6, posttest comprehension score 91.3. One of the interesting findings of the study is that children who showed improvement in decoding skills also showed a corresponding improvement in reading comprehension. Children who did not improve in word-attack skills failed to improve in reading comprehension. The investigators noted that poor decoding skill, therefore, appears to function as a factor that limits reading comprehension.

Phoneme awareness training appears to benefit poor readers from a wide age range. Truch (1994) provided 80 hours of phonological awareness and decoding training

using the Auditory Discrimination in Depth (Lindamood & Lindamood, 1975) program to 281 poor readers ranging in age from 6 to 18 years. When tested at the end of the two-year period of training, significant gains had been achieved by these subjects in word identification, spelling, and decoding in context.

Although the results from these studies appear to indicate that an increase in phoneme awareness will improve decoding and reading skills, it is possible that not all children profit from such training. For instance, Torgeson and Morgan (1990) observed that even though a group of kindergarten children gained much from phoneme awareness training, nearly 30% of these children failed to show improvement in overall reading skills. This indicates that some children need training in decoding skills whereas others may require comprehension training or changes in their motivation and home environment.

Reading Component-Based Instruction: Decoding Training

As noted earlier, phoneme awareness is a precursor of decoding. Once phoneme awareness is established, decoding instruction can be the next step. Decoding skill training is usually described under the broad heading of "phonics approach" or "code-emphasis approach." As the term "approach" implies, there are several phonics or code-emphasis approaches available such as analytic phonics and linguistic phonics as well as complete programs such as DISTAR (Direct Instructional System for Teaching Arithmetic and Reading) (Engleman, Becker, Hanner, & Johnson, 1980) and Spalding's Writing Road to Reading (Spalding & Spalding, 1986). A program designed to incorporate the development of both phoneme awareness and decoding is the Auditory Discrimination in Depth (ADD) (Lindamood & Lindamood, 1975). Many studies discussed under the Phoneme Awareness heading have provided decoding instruction after establishing

phoneme awareness (e.g., Aaron & Boyd, 1995; Bradley et al., 1985). These studies report significant improvement in reading skills.

Reading Component-Based Instruction: Comprehension Strategy Training

Studies that focused on the improvement of comprehension skills in children who can decode the written language but cannot comprehend it show that teaching comprehension strategies improves reading skills. In fact, strategic reading is a prime characteristic of expert readers, for the following reasons: first, strategies allow readers to elaborate, organize, and evaluate information derived from the text; second, the acquisition of cognitive strategies related to reading coincides and overlaps with the development of other cognitive strategies and enhances attention, memory, communication, and learning; third, strategies are personal cognitive tools that are controllable by readers; fourth, strategic reading reflects metacognition and motivation because readers need both the knowledge and a disposition to use them; fifth, strategies that foster reading can be taught directly; and finally, strategic reading generalizes and enhances reading throughout the curriculum (Paris, Wasik, & Turner, 1991).

Examples of cognitive strategies designed to improve comprehension include: creating an awareness of the purpose of reading (Schunk & Rice, 1989), developing a sensitivity to story grammar elements while reading (Short & Ryan, 1984), activating relevant schemata (Carnine & Kinder, 1985), developing story maps that represent the material being read (Idol, 1987), building or creating mental imagery of the text (Gambrell & Bales, 1986), generating questions as one reads the text (Symons, McGoldrick, Snyder, & Pressley, 1990), predicting the idea that would follow the current statement or story events, and being able to summarize what had been read (Palincsar & Brown, 1988).

Several cognitive strategy methods have been developed explicitly to teach comprehension skills; examples are: "transactional strategy instruction" (Pressley, El-Dinary, Gaskins, Schuder, Bergman, Almasi, & Brown, 1992), "self-regulated strategy development" (Graham & Harris, 1993), and "reciprocal teaching" (Palincsar & Brown, 1984). These cognitive strategy methods attempt to improve comprehension by teaching the reader to mobilize selected strategies, to monitor the personal use of the strategies, and to take corrective action when comprehension fails. Corrective measures include guessing meaning from context, referring to the dictionary, or seeking the help of a peer or the teacher (Symons et al. , 1990).

Studies have documented that training in these strategies does improve the comprehension of poor readers. For instance, Duffy et al. (1987) report that the test performance of low ability readers who were taught these metacognitive skills by teaching them which strategies to use and when these strategies should be used, was superior to that of a group of normal readers who were taught in the traditional way without special strategy instruction. Bednarczyk (1991) taught 5th - and 6th-grade students with learning disabilities task-specific strategies along with procedures for regulating strategy use including self-instruction, self-monitoring, and goal setting. Bednarczyk reported that the reading comprehension of five students with a learning disability who received the strategy instruction improved significantly.

In a review of research on strategy instruction with a particular focus on reading disabilities, Weisberg (1988) concluded that children with reading disabilities need explicit instruction in understanding what the task is and how to use appropriate strategies. Palincsar and Brown (1988) noted that many children believe that the goals of reading are

to say words correctly and to read the text quickly, rather than constructing meaning from the text. It is not surprising, therefore, that providing poor readers with LD explicit instructions about the purpose of their reading has been shown to improve the students' comprehension of the material being read (O'Shea, Sindelar, & O'Shea, 1987). In a study of remedial readers from the 4th and 5th grades, Schunk and Rice (1989) found that children who received instructions in establishing goals for reading such as answering questions before starting to read, demonstrated better perceived capability about their own reading performance. Also, children who received instructions in the use of strategy demonstrated higher comprehension skills than those who received conventional instruction.

Reading comprehension can be facilitated by activating the schema that is appropriate to the material that is being read, as well as by presenting advance organizers. Idol-Maestas (1985) found that when students with learning disabilities were provided prompts in the form of questions about the material to be read, their ability to answer comprehension questions improved. Carnine and Kinder (1985) taught low achieving 4th through 6th grade children how to generate relevant schemata by asking questions about the main characters, the character's goals, the obstacles to reaching the goals, and the resolution of the plot in the story prior to reading. Following the training, the comprehension scores of the children who had received schema training had improved. Snider (1989) trained junior high school students with LD to activate relevant schemata before reading and to develop sensitivity to text structure. The results of this study indicated that students in the training group demonstrated superior reading comprehension performance.

Many stories for children have a structure that consists of a plot with a beginning and an end; a plot with a conflict; and events that aid in resolving the conflict. This structure or literary format is referred to as story grammar. Children's sensitivity to story grammar can be influenced by training students to ask "where," "who," "when," and "what" questions. Chan (1991) found that the reading comprehension of students with LD from grades 5 and 6 improved when they were sensitized to the story grammar by presenting a few thematic questions before the text was read. Short and Ryan (1984) trained poor readers from the 4th grade to use knowledge of story grammar by asking several "wh" and "how" questions. This strategy training produced dramatic gains in comprehension and provided evidence of generalization of the skill. Johnson, Graham, and Harris (1997) examined the effect of teaching the story grammar strategy through a self-regulated strategy development model to children from grades 4, 5, and 6. The self-regulated strategies included training in self-instruction, self-monitoring, and goal setting. Analysis of test scores indicated that the reading comprehension of students with LD can be improved to a level comparable to that of normal readers who did not receive strategy instruction.

The construction of mental pictures and the use of mental imagery as children read have been shown to be effective in improving children's ability to detect inconsistencies in new reading passages. Gambrell and Bales (1986) trained poor readers from 4th and 5th grades to construct images that represented sentences and paragraphs that children read. After training, the children trained in imagery construction detected more inconsistencies in new passages than children not so trained. Idol (1987) taught the use of story maps while reading to children who were low-achieving and or had LD. The investigators

concluded that the use of story maps that are schematic representations of story grammar can improve comprehension of students, whether they were low achieving, or normally achieving.

Jenkins, Heliotis, Stein, and Haynes (1987) trained 3rd and 4th grade children with learning disabilities to summarize important ideas in paragraphs by requiring them to write brief statements of what they had read. Post-training tests indicated that students taught the summarization strategy demonstrated better comprehension than control students. Gajria and Salvia (1992) taught 6th through 9th grade students five rules of summarization. The post-treatment evaluation indicated that the summarization strategy significantly increased the reading comprehension of the students. Additionally, the children showed evidence of generalization and also retention of the strategy over time.

Reciprocal teaching (RT) is a comprehension fostering method that combines four cognitive strategies that have been found useful in enhancing reading comprehension. According to Palincsar, David, and Brown (1992), reciprocal teaching focuses upon teaching students specific comprehension-fostering strategies that the students can apply when reading new text. The four comprehension strategies - questioning, clarifying, predicting, and summarizing are presented initially by modeling. The implementation of these strategies is progressive, beginning with the teacher as the expert reader modeling the strategies for the novice (student) readers. After guided practice, the students assume the responsibility of utilizing these strategies while reading.

Palincsar and Brown (1984) trained children with learning disabilities to use the four strategies. Children taught to use these strategies were able to generalize the use of these strategies and performed better on tests of reading comprehension than those not

trained. The effects of metacognitive strategy instruction and reciprocal teaching of 4th grade students were investigated by Dermody (1988). These children were divided into three categories based on their performance on the Stanford Diagnostic Reading Test (SDRT): average decoding and comprehension, above average decoding but below average comprehension, and below average decoding and comprehension. The group with above average decoding and below average comprehension had the highest gain in the reading comprehension subtest of the SDRT. Lysynchuk, Pressley, and Vye (1990) used the reciprocal strategy approach to instruct 36 children from 4th grade and 36 children from 7th grade who had adequate decoding skill but poor comprehension skills as determined by standardized reading tests. Expository passages were the material used. The control group consisted of students exposed to the same reading material but not given reciprocal strategy training. After 13 sessions of teaching, it was found that children who received reciprocal instruction showed gains in comprehension that were significantly greater than the gains shown by children in the control group. A meta analysis of studies of RT (Rosenshine & Meister, 1984) showed that the effect size of comprehension strategy instruction was .30 when standardized comprehension tests were used and .86 when experimenter-developed tests were used.

This literature review raises questions about the efficacy of current LD and Title I reading remediation practices and suggests that alternative diagnostic procedures and remediation techniques can be expected to produce more promising results. Even though phoneme awareness training and comprehension strategy training were shown to be effective separately as far as the present investigator's knowledge goes, no study appears to have matched reading instruction with the specific nature of deficit and examined the

effectiveness of such a paradigmatic approach. This challenge was taken up in the present study.

Chapter 3

PROCEDURE

Site of Investigation

The present study was conducted in a rural midwestern school corporation during the 1997 - 1998 school year and involved 146 students from grades 2 - 6.

Four treatment groups were located in a small town and two located in rural areas, for a total of six treatment groups. There were six control groups; five were located in the same small town where the treatment groups were located, and one in a rural area. Thus, a total of 12 classrooms were involved in this study.

Identification of Poor Readers

Before administering standardized tests of reading, the 12 teachers who taught these classes were asked to provide the names of children in their classroom who were experiencing difficulty in reading. One hundred and fifty-one names of students were provided. A total of 146 students, 53 females (36%) and 93 males (64%) were administered the diagnostic battery of tests. The grade-wise distribution of these children is shown in Table 1.

Table 1

Distribution of Students Considered At-risk for Reading Problems According to Grade

Grade	Number of Students	Percent
2	6	4
3	20	14
4	38	26
5	42	29
6	40	27
Total	146	

Treatment and Control Groups

Of the total of 146 students, 83 were assigned to a treatment group and 63 were assigned to a control group. This assignment was based on the classroom teacher's decision whether to place his or her children in either the treatment group or the control group. Demographic information regarding each child's gender, age, grade placement, educational placement, and SES was collected at the time of pretesting. The students from treatment and control groups were matched, as much as possible, according to their weak component (discussed under Diagnostic Procedures), gender, age, and grade.

Graduate students delivered the component-based remedial reading instruction. None of the teachers was given preservice instruction regarding the nature of the project. The researcher met with the teachers regarding the collection of student demographics,

instructional information, arrangement of schedules for pre and posttesting, and assignment/scheduling of instructional time for students in the treatment group.

Diagnostic Procedures

Pretesting

Rationale: Identification of the Weak Component

The Reading Component Model recommends the use of particular evaluation procedures for diagnosing the weak component (Aaron, 1990; 1995). The purpose of differential diagnosis is not to label but rather, to locate and identify the weak component that causes the reading deficit, and prescribe specific treatment.

The identification of the weak component is based on the following rationale: Because listening comprehension and reading comprehension are highly correlated, these two skill levels are expected to be very similar. If, however, listening comprehension is in the average or above-average range but reading comprehension is significantly lower, this difference is likely to be due to poor decoding skills. Administration of a test of word attack skill (such as Word Attack Subtest from the Woodcock Diagnostic Reading Battery, 1997, WDRB hereafter) should confirm this expectation. On the other hand, if both listening and reading comprehension are below average, then a weak comprehension skill is likely to be the source of the reading problem. If the individual obtains a below-average score on tests of reading comprehension and listening comprehension as well as a low score on the Word Attack (decoding) then he or she is weak in both comprehension and decoding components.

Procedure: Identification of the Weak Component

A comparison of standard scores is used in the diagnostic procedure. The Woodcock Diagnostic Reading Battery (1997) has the following statistics: a standard score (SS) of 100, and standard deviation of 15. The standard error of measurement varies from 4.7 – 6.7, depending on the particular subtest administered.

Only children who had a standard score of 85 or lower on the Passage Comprehension (Reading Comprehension, RC hereafter) subtest of the Woodcock Diagnostic Reading Battery (WDRB, Woodcock, 1997) were involved in the study. The following diagnostic procedure was used for identifying the weak component:

Step 1. Reading comprehension and listening comprehension standard scores from WDRB were compared. If the reading comprehension score was 85 or less but the listening comprehension score was higher by at least one standard error of measurement (about 4.7 – 6.7 points depending on the grade level), the student was considered to have adequate comprehension skills but a weakness in decoding skills. For example, if the reading comprehension standard score (SS) was 85 and the SS for listening comprehension was 92, then this individual was considered to have comprehension skills in the normal range. If the individual's word attack score was 85 or less on the WDRB word attack test then the deficit could be traced to the decoding component. This leads to the diagnosis that this individual's reading difficulties could be attributed to a weak decoding component. If this was not the case, then step 2. was followed.

Step 2. Reading comprehension and listening comprehension standard scores from WDRB were compared. If both the listening comprehension and reading comprehension standard scores were 85 or below, but the word attack score was at least 1 standard error

of measurement above (SS of 85 + 5 - 7), the student was considered to have a weakness in the comprehension component only, but not in decoding. (For example, reading comprehension = 84; listening comprehension = 85; word attack = 92). If this condition was not satisfied, then step 3 was followed.

Step 3. Reading comprehension, listening comprehension, and word attack standard scores from WDRB were compared. If all the three standard scores were below a SS of 85, the student was considered to be a poor reader with deficits in both the decoding and comprehension components. Hypothetical cases belonging to the three groups are shown in Table 2.

Table 2

Hypothetical Cases of Children with Different Deficits

Subject	Listening Comp.	Reading Comp.	Word Attack	Weak Component
A	SS = 85 - 92+	SS = 85 or less	SS = 85 or less	Decoding
B	SS = 85 or less	SS = 85 or less	SS = 92 or above	Comprehension
C	SS = 85 or less	SS = 85 or less	SS = 85 or less	Decoding & Comprehension

When these criteria were applied, 56 students were diagnosed as having decoding deficit (treatment = 34, control = 22) and 43 students were diagnosed as having both decoding and comprehension deficits (treatment = 32, control = 11). No student was diagnosed as having only comprehension deficit. Thirty-one students scored 85 or above on all three subtests and were not included in the study. Sixteen students moved or

changed schools and complete data were not available for these children. The distribution and percentage of the resultant 130 children belonging to the three categories is shown in Table 3.

Table 3

Distribution of Children Belonging to the Deficit Categories

Decoding Deficit Only			
Treatment Group	Percent	Control Group	Percent
34	26%	22	17%
Comprehension Deficit Only			
Treatment Group	Percent	Control Group	Percent
00	00%	00	00%
Decoding and Comprehension Deficit			
Treatment Group	Percent	Control Group	Percent
22	17%	11	08%

Information obtained through an informal assessment of decoding skill was also used for validating the initial diagnosis. Students were asked to read a list of 40 function words (grammatical morphemes) and a list of content words (see Function Word List and Content Word List in Appendix B). The fact that function words are semantically empty and, therefore, have to be kept in the working memory in a phonological form, provides an additional avenue to assess poor decoding skill. When poor readers commit a

significant number of errors when reading a list of function words and content words, this indicates a problem in word recognition.

Instructional Procedures

Instruction of Control Groups

Students in the control groups received their instruction from their classroom teachers. Interviews with the teachers of the control group revealed that they did not have knowledge of the diagnostic procedure and intervention procedures used with the treatment group. Teachers in the control groups did not receive any information regarding the pretest diagnostic information of the children in their classrooms until the completion of the study. Information regarding control group instruction (code-based, meaning-based, or a combination of the two/mixed) was gathered before the beginning of the study by the use of a researcher-developed questionnaire (see Instructional Questionnaire in Appendix C, Teacher Demographics in Appendix D). Thus, children in the control groups differed from children in the treatment groups in two respects:

(a) Teachers of children in control groups were not aware of the specific diagnostic findings of each child, and

(b) Teachers of children in control groups did not deliberately select and use instructional strategies that would match diagnostic findings.

Information collected through the Instructional Questionnaire indicated that teachers used a variety of instructional methods such as "Hermann", "Merrill Linguistic Reading Program", "SRA Basic Reading Skills", and "Matt Language". One teacher stated that she used materials that "best suited student's needs" and that combinations of

materials were used. For the purposes of this study, the variety of instructional techniques and methods described were considered "mixed" or "teacher determined." Furthermore, none of the teachers in this study provided specific instruction in phoneme awareness eventhough many children had deficits in decoding. A number of children also had poor comprehension skills. Nevertheless, none of the teachers focused their instructional efforts on structured comprehension strategy skills. Therefore, the teacher-determined instruction was distinctly different from the component-based remedial reading instruction.

Instructional Procedures for Treatment Groups

Under the reading component-based remedial instruction, students with a deficit in decoding skills received training in phonological awareness and decoding and those who had deficits in both components received instruction in decoding as well as comprehension. There were two types of reading component-based remedial instruction: phonological awareness +/ decoding, and a combination of phonological awareness +/ decoding and comprehension. Students with a weak decoding component received approximately 20 hours (80 lessons x 15 minutes each) of instruction in phoneme awareness and decoding. Students with weakness in both comprehension and decoding components received 10 hours (40 lessons x 15 minutes) of instruction in phoneme awareness and decoding and 10 hours (40 lessons x 15 minutes each) of comprehension strategy training for a total of 20 hours of instruction. The 20 hours of treatment instruction was provided by specially trained graduate students and replaced 20 hours of the teacher's instruction usually given either in the resource room or regular classroom.

Teachers of the treatment group were not given information regarding student scores or instructional methods until after the completion of the study.

Remedial Instruction for Children with Poor Word Recognition Skills

Students who were only weak in decoding received instruction in the area of phoneme awareness and decoding skills only. The treatment procedures used in this study were designed to 1) develop phoneme awareness, 2) develop decoding skills, and then 3) develop sight word reading skills. These three procedures were completed in a sequential fashion.

The Auditory Discrimination in Depth (ADD) (Lindamood, 1975) program was used to provide the instructional materials for this group of children. ADD is a multisensory remediation program that assists students of all ages to develop auditory sensitivity to phonemes. This program focuses on integrating sensory feedback from the eye, ear, and mouth to track the correspondence between the sound patterns of oral language and subsequently the alphabet. Students learn to identify and classify speech sounds, progressing from isolated sounds, to sequences of sounds in nonsense syllables. Subsequently, they learn to associate consonant and vowel sounds with letters. After this skill is mastered, students put together letters to form syllables and finally learn how to pronounce written words.

Each treatment lesson for this study was designed for a block of approximately 15 minutes, for 80 instructional lessons that amounted to a total of 20 hours of instruction. Remedial instruction to this group was carried out in the following three phases:

Phase I: Phoneme Awareness

Phase II: Phoneme-Grapheme association

Phase III: Syllable and word reading through reading and spelling.

A detailed description of the Lindamood method and lesson plans is provided in Appendix E.

Remedial Instruction for Children with Poor Word Recognition Skills & Poor Comprehension

Students who were weak in both decoding and comprehension received instruction in both phoneme awareness and decoding (10 hours) and comprehension strategy instruction (10 hours) that amounted to a total of 20 hours. The comprehension instruction was the training of students in ten cognitive strategies. Icons or symbols representing each of the ten strategies were developed by the researcher to aid the student's internalization and generalization of these strategies. Students were taught to associate particular reading strategies to icons. The icons were faded as the students mastered the use of strategies. Each comprehension treatment lesson for this study was designed for a block of approximately 15 minutes, for 40 instructional lessons amounting to a total of 10 hours of instruction.

The ten comprehension strategies that were taught were:

1. Activating or building **schema** (Carnine & Kinder, 1985)

The instructor and children built the needed background (schema) for the lesson through discussion, practical experience, books, film, or video. Important concepts and vocabulary were introduced in this manner.

2. **Questioning** story text (Palincsar & Brown, 1988)

Children were asked to pretend that they are teachers and come up with questions that they would ask before and during the reading.

3. Creating an awareness for the **purpose** of reading this material (Schunk & Rice, 1989)

Children were taught to question themselves as to "why are we reading this story?", "what do I think I will know after I have read this story?"

4. Becoming aware of story **structure** and **grammar** (Short & Ryan, 1984)

Children were taught to question themselves as to "what is important about this story?", "what am I supposed to learn from this lesson?"

5. Thinking about **scenes** or **activities** (Gambrell & Bales, 1986)

Children were asked to think about the scenes or activities described in the lessons. Some prompting question examples were: "what would the story be like if... "what would happen if ... ?"

6. **Predicting** story events, story outcomes (Palincsar & Brown, 1988)

Children were asked to think about or guess what will happen in the story. For example, ask, "what do I think is going to happen?"

READ *each student then read the text, either silently or orally to the group. During the reading, strategies 7 and 8 were used.*

7. **Monitoring** comprehension (Symons, McGoldrick, Snyder, & Pressley, 1990)

Children were asked to continually ask themselves questions regarding their understanding of what was being read. This included guessing meaning from the text, referring to the dictionary, and seeking the assistance of a peer or teacher.

8. **Clarifying** story text (Palincsar & Brown, 1988)

Children were encouraged to try to guess from the context if they did not understand the meaning of a word in a sentence. If this failed, they were encouraged to ask the teacher or a peer in the reading group.

Examples of questions that students asked themselves for both strategies 7 and 8 were:

"Do I know what this means?" "do I understand what a ... is?" "who can help me understand what this means?" "where can I get help to understand what this means?"

Students were then re-grouped to complete strategies 9 and 10.

9. Identifying the **main idea** - use of story maps (Idol, 1987)

Children were asked to identify the most important thing/s that they learned from the text. A prompting question for this strategy was "this story was about...?"

10. **Summarizing** story text (Palincsar & Brown, 1988)

Children were asked to close their reading material after reading, and tell (summarize) in one or two sentences in their own words, what they learned. A prompting question was: "what was the most important thing that I learned from this?"

These strategies were carried out through the Reciprocal Teaching (RT) method (Palincsar, David, & Brown, 1989), in a small group (4-5 students) setting. In the RT method first the instructor (graduate student) modeled and provided instruction regarding reading strategies. The instructor then slowly and progressively transferred the instruction responsibility to the students. The instructor's role was then to act as a guide as the students took on the instructor's role. In this particular study, the exchanging of roles depended upon first the mastery of the ten comprehension strategies.

A detailed description of the comprehension strategies and researcher-developed materials and lesson plans is in Appendix F.

Graduate Students

Graduate students from the School Psychology Program at ISU delivered the instruction to the students receiving the component-based remedial reading instruction. Graduate students providing the instruction had already completed a graduate level course in reading that focused on remedial reading and diagnostic methods (School Psychology 670). In addition, they were given 6 hours of preservice training in phoneme awareness and decoding using the Auditory Discrimination in Depth (ADD) (Lindamood, et al., 1975), and comprehension strategy instruction. As part of the instruction, the graduate students kept a log of child attendance and steps introduced. The graduate students were evaluated regarding mastery and performance of the treatment interventions during the course of their instruction by the researcher. They also attended monthly meetings to discuss the delivery of the treatment and had access to the researcher if problems arose.

Posttests

The Word Attack and Reading Comprehension subtests from the WDRB (1997) and Function Word and Content Word lists were used as posttests.

Chapter 4

RESULTS

The Word Attack, Reading Comprehension, and Listening Comprehension subtest pretest scores from the WDRB (1997) were used to test the first hypothesis: among elementary school students who are identified by their teachers as at risk for reading, the following four different kinds of poor readers are identifiable; (a) those with a weakness in only decoding skills, (b) those with a weakness in only comprehension skills, (c) those with a weakness in both decoding and comprehension skills, and (d) those with no weakness in decoding and comprehension skills, but whose reading problems may be caused by extraneous factors. The total number of students was divided into four categories based on the weak component. The results are shown in Table 4. The distribution is graphically represented in Figure 4.

Table 4

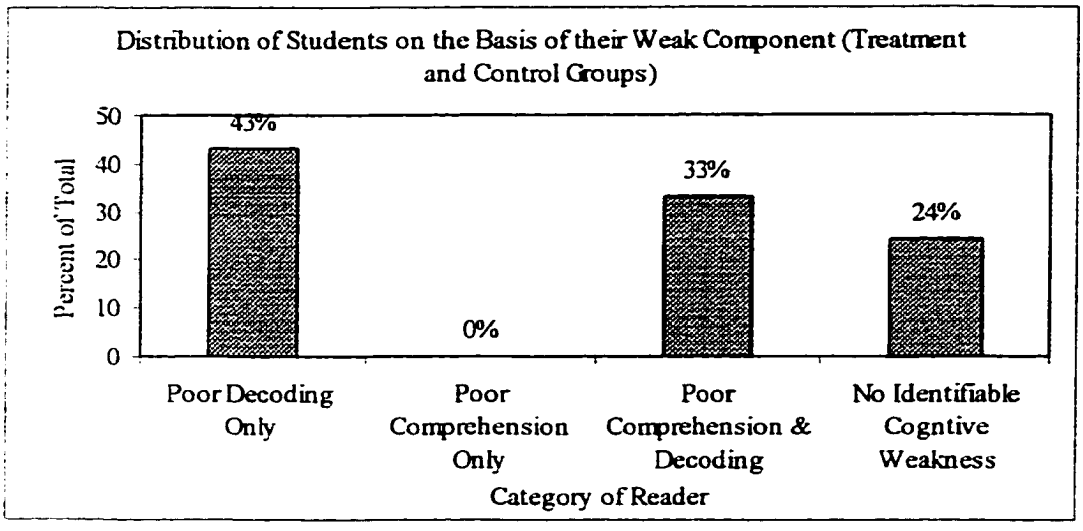
Percent of Total Number of Students in Each Category of Readers

Category	Total Number of Students = 130	Percent of Total
Poor Decoding only	56	43%
Poor Comprehension only	00	00%
Poor Decoding + Comprehension	43	33%
No Identifiable Cognitive Weakness	31	24%
Total	130	

The data presented in Table 4 indicate that 43% of the poor readers from both treatment and control groups had weakness in decoding skill only and 33% had weakness in both decoding and comprehension. No student was found to have poor comprehension in the presence of good decoding skills. From among both groups, 24% showed no significant deficiency in either decoding or comprehension. The reading difficulty reported for these children may be due to noncognitive factors such as poor motivation, attention deficits, or unfavorable environmental conditions.

Figure 1

Distribution of Students on the Basis of Their Weak Component (Treatment and Control Groups)



The analysis of hypotheses two, three, and four were carried out with two goals in mind: (1) to see if either the treatment group or the control group showed significant improvement, and (2) to see if the improvement of one group was significantly better than the other. All the data reported here used a Mixed Design Analysis of Variance based on the General Linear Model. The present procedure combines the simple ANOVA that analyzes differences between treatment and control groups and the Repeated Measure ANOVA which tests differences between pre and post test scores. In addition, the data were also tested for differences using Box's Test of Equality of Covariance Matrices. The Box's test is used for accepting or rejecting the null hypothesis that the observed covariance matrices of the dependent variables are equal across all treatment and control groups.

Since no students were identified as having a comprehension only deficit, hypothesis 2, that there will be some poor readers with comprehension deficit only, was dropped from the study.

For students who had no identifiable cognitive weakness the mean word attack and reading comprehension scores were 104.58 (SD = 13.77) and 103.67 (SD = 8.41) respectively.

Analysis of the data obtained from the remaining children yielded the following results, as shown in summary form in Table 5.

Table 5

Summary of Pre and Post Test Scores of Treatment and Control Groups*

"Decoding Deficit Only" Groups

Treatment Group			*Control Group*		
Word Attack	SS	SD	Word Attack	SS	SD
Pretest	76.82	(10.82)	Pretest	73.90	(9.65)
Posttest	76.23	(17.73	Posttest	77.45	(12.47)
Reading Comprehension			Reading Comprehension		
Pretest	87.64	(10.74)	Pretest	77.86	(12.72)
Posttest	88.88	(8.77)	Posttest	82.68	(14.57)
Function Word Error			Function Word Error		
Pretest	7.66	(7.93)	Pretest	13.91	(8.84)
Posttest	4.96	(6.45)	Posttest	11.33	(8.88)
Content Word Error			Content Word Error		
Pretest	2.07	(5.65)	Pretest	3.63	(5.08)
Posttest	1.32	(4.56)	Posttest	2.00	(3.31)

"Decoding + Comprehension Deficit" Groups

Treatment Group			*Control Group*		
Word Attack	SS	SD	Word Attack	SS	SD
Pretest	83.84	(13.24)	Pretest	74.27	(10.73)
Posttest	83.56	(15.56)	Posttest	81.18	(10.85)
Reading Comprehension			Reading Comprehension		
Pretest	78.53	(11.10)	Pretest	84.36	(8.83)
Posttest	82.50	(13.09)	Posttest	86.00	(9.30)
Function Word Error			Function Word Error		
Pretest	7.62	(8.12)	Pretest	7.28	(4.42)
Posttest	6.54	(6.87)	Posttest	4.85	(3.28)
Content Word Error			Content Word Error		
Pretest	2.33	(4.30)	Pretest	1.57	(1.90)
Posttest	1.79	(3.94)	Posttest	0.85	(1.46)

* Mean Standard Scores (SS), Standard Deviation (SD)

The word attack scores for the "decoding deficit only" groups are shown in Table 6.

Table 6

Word Attack Scores for "Decoding Deficit Only" Groups

	Pretest	Posttest
Treatment Group	76.82	76.23
Control Group	73.90	77.45

On measures of word attack, the "decoding deficit only treatment group" had a pretest mean score of 76.82 (SD = 10.82) and a posttest score of 76.23 (SD = 17.73). On the same pre and post word attack tests, the "decoding deficit only control group" had a mean pretest score of 73.90 (SD = 9.65) and a posttest score of 77.45 (SD = 12.47). Analysis of variance that was used to test the differences between pre and posttests showed that the combined gain scores were not statistically significant (df 54, F .645, P < .425). Thus, the combined gain score of the two groups was not significant.

When the gain in word attack score of the "decoding deficit only treatment group" was compared with that of the "decoding deficit only control group", again, the difference was not significant (df 54, F .071, p < .79). These results are interpreted to indicate that phoneme awareness and decoding training did not have a more noticeable effect on word attack skill than conventional teaching. It has, however, to be noted that the Box's Test of Equality of Covariance Matrices indicated that the observed covariance matrices of the dependent variables are not equal across groups (see Table 7) with the

"decoding deficit only groups" covarying from each other, indicating that the gain shown by the control group is significantly different from the gain shown by the treatment group.

Table 7

Results of Box's Test of Equality of Covariance Matrices for Word Attack Scores for the "Decoding Deficit Only" Group

Box's M	11.846
F	3.779
df1	3
df2	91501
Significance	.010

Table 8 provides word attack scores for the "decoding + comprehension deficit" groups.

Table 8

Word Attack Scores for "Decoding + Comprehension Deficit" Groups

	Pretest	Posttest
Treatment Group	83.84	83.56
Control Group	74.27	81.12

On measures of word attack, the "treatment group with decoding + comprehension deficit" obtained a mean pretest word attack score of 83.84 (SD = 13.24) and a posttest score of 83.56 (SD = 15.56). The "control group with decoding + comprehension deficit" obtained a pretest word attack score of 74.27 (SD = 10.73) and a posttest score of 81.18 (SD = 10.85). ANOVA showed that the combined word attack score of the treatment and control group was statistically significant (df 41, F = 5.66, p <.022).

When the data were analyzed to see if the treatment group differed significantly from the control group in gain scores, no significant difference was found between the groups (df 41, F = 1.76, p < .198). It can, therefore, be concluded that phoneme awareness and decoding training had no greater and significant effects on the word attack skills of the trained group than the group that was taught in the conventional manner even though when combined, the gains of the two groups were significant. Table 9 provides a summary of the results of Box's Test of Equality of Covariance Matrices for word attack scores for the "decoding + comprehension deficit" group.

Table 9

Results of Box's Test of Equality of Covariance Matrices for Word Attack Scores for the "Decoding + Comprehension Deficit" Group

Box's M	2.167
F	.666
df1	3
df2	5589
Significance	.573

Reading Comprehension scores for the "decoding deficit only" groups are provided in Table 10.

Table 10

Reading Comprehension Scores for "Decoding Deficit Only"Groups

	Pretest	Posttest
Treatment Group	87.64	88.88
Control Group	77.86	82.68

On measures of reading comprehension, the "treatment group with decoding deficit only" obtained a pretest mean score of 87.64 (SD = 10.74) and a posttest mean score of 88.88 (SD = 8.77). The corresponding pre and posttest scores of comprehension for the "control group with decoding deficit only" were 77.86 (SD = 12.72) and 82.68

(SD = 14.57) respectively. The combined gain scores of the two groups was statistically significant (df = 54, F = 8.57, p < .005).

When the treatment and control groups with "decoding deficit only" were compared with each other for significant differences in their comprehension gain scores, it was found that the control group's gain score was significantly different from that of the treatment group (df 54, F = 7.272, p < .009). This suggests that the control group did significantly statistically better than the treatment group in reading comprehension. However, Box's Test of Equality of Covariance Matrices indicated that the observed covariance matrices of the dependent variable to be equal across the two groups (see Table 11).

Table 11

Results of Box's Test of Equality of Covariance Matrices for Reading Comprehension Scores for the "Decoding Deficit Only" Group

Box's M	8.304
F	2.649
df1	3
df2	91501
Significance	.047

The reading comprehension scores for the "decoding + comprehension deficit" groups are provided in Table 12.

Table 12

Reading Comprehension Scores for "Decoding + Comprehension Deficit" Groups

	Pretest	Posttest
Treatment Group	78.53	82.50
Control Group	84.36	86.00

On measures of reading comprehension, the "treatment group with decoding + comprehension deficit" obtained a pretest score of 78.53 (SD = 11.10) and a posttest score of 82.50 (SD = 13.09). The corresponding pre and posttest scores of reading comprehension for the "control group with decoding + comprehension deficit" were 84.36 (SD = 8.83) and 86.00 (SD = 9.30) respectively. The combined gain score of the two groups was statistically significant ($df = 41$, $F = 3.627$, $p < .064$).

When the treatment and control groups with the "decoding + comprehension deficit" were compared with each other for significant differences in their combined gain scores, no statistically significant difference was found ($df = 41$, $F = 1.567$, $p < .2186$). Additionally, Box's Test of Equality of Covariance Matrices indicated that the observed covariance matrices of the dependent variables to be equal across the two groups (see Table 13).

Table 13

Results of Box's Test of Equality of Covariance Matrices for Reading Comprehension Scores for the "Decoding + Comprehension Deficit" Group

Box's M	5.397
F	1.658
df1	3
df2	5589
Significance	.174

The next set of analysis was carried out to see if the infusion of experimental remedial treatment had significant effects on function word reading and content word reading. The dependent measures were the number of errors committed when children read aloud these lists of words. Table 14 provides information regarding function word reading error scores for the "decoding deficit only" groups.

Table 14

Function Word Reading Error Scores "Decoding Deficit Only"Groups

	Pretest	Posttest
Treatment Group	7.66	4.96
Control Group	13.91	11.33

On the function word reading test, the "treatment group with decoding deficit only" obtained a pretest error score of 7.66 (SD = 7.93) and a posttest error score of 4.96 (SD = 6.45). Thus, this group improved its word reading performance by 2.7 words. The corresponding control group obtained a pretest error score of 13.91 (SD = 8.84) and a posttest error score of 11.33 (SD = 8.88), a change of 2.58 words. When the change scores of both groups were tested for within group change, the difference was statistically significant (df 37, $F = 17.37$, $p < .001$) indicating greater gains when both groups were combined.

When the "decoding deficit only" treatment group was compared with the "decoding deficit only" control group, the difference was significantly in favor of the treatment group (df 37, $F = 5.82$, $p < .012$).

Table 15 provides the results of Box's Test of Equality of Covariance Matrices for function word reading error for the "decoding deficit only"group.

Table 15

Results of Box's Test of Equality of Covariance Matrices for Function Word Reading Error Scores for the "Decoding Deficit Only" Group

Box's M	4.929
F	1.521
df1	3
df2	9167
Significance	.207

In Table 16 the function word reading error scores for the "decoding + comprehension deficit" groups are displayed.

Table 16

Function Word Reading Error Scores "Decoding + Comprehension Deficit" Groups

	Pretest	Posttest
Treatment Group	7.62	6.54
Control Group	7.28	4.85

On the function word reading test, the "treatment decoding + comprehension deficit group" obtained a pretest error score of 7.62 (SD = 8.12) and a posttest score of 6.54 (SD = 6.87), a difference of 1.08. The corresponding error scores for the control group were 7.28 (SD = 4.42) and 4.85 (SD = 3.28), respectively, a difference of 2.43. The combined gain scores of both groups were statistically significant (df 29, $F = 9.16$, $p < .005$).

When the error scores of the treatment and control group were tested for significance of difference between them, it was not significant (df 29, $F = .120$, $p < .732$). This indicates that in reading grammatical morphemes, both treatment and control groups gained significantly but equally. Confirming this finding, Box's Test of Equality of Covariance Matrices also indicated that the observed covariance matrices of the dependent variables are equal across groups (see Table 17).

Table 17

Results of Box's Test of Equality of Covariance Matrices for Function Word Reading Error Scores for the "Decoding + Comprehension Deficit" Group

Box's M	4.859
F	1.411
df1	3
df2	1730
Significance	.238

Table 18 displays the content word reading error scores for the "decoding only deficit" groups.

Table 18

Content Word Reading Error Scores for "Decoding Deficit Only" Groups

	Pretest	Posttest
Treatment Group	2.07	1.32
Control Group	3.63	2.0

On the content word reading test, the treatment group with "decoding deficit only" obtained a pretest error score of 2.07 (SD = 5.65) and a posttest error score of 1.32 (SD = 4.56), the gain being an average of 0.75 words. The corresponding control group obtained a pretest error score of 3.63 (SD = 5.08) and a posttest error score of 2.0 (SD =

3.3.1), a gain of 1.63 words. When the change scores of both groups were tested for within group change, the difference was statistically significant (df 37, F = 11.4, p < .022) indicating that when the gain scores of both groups were combined, the gain was statistically significant.

However, when the "decoding deficit only" treatment group was compared with the "decoding deficit only" control group for improvement in content word reading skill, the groups did not differ from each other significantly (df 37, F = .427, p < 0.517) indicating that the gains of both groups were equal.

Table 19 provides information regarding the Box's Test of Equality of Covariance Matrices for content word reading error scores for "decoding only deficit group".

Table 19

Results of Box's Test of Equality of Covariance Matrices for Content Word Reading Error Scores for the "Decoding Deficit Only" Group

Box's M	5.457
F	1.674
df1	3
df2	6397
Significance	.170

Content word reading error scores for the "decoding + comprehension deficit" groups are displayed in Table 20.

Table 20

Content Word Reading Error Scores for "Decoding + Comprehension Deficit" Groups

	Pretest	Posttest
Treatment Group	2.33	1.79
Control Group	1.57	0.85

On the content word reading test, the "decoding + comprehension deficit" treatment group obtained a pretest error score of 2.33 (SD = 4.30) and a posttest score of 1.79 (SD = 3.94), a difference of .54. The corresponding error scores for the control group were 1.57 (SD = 1.90) and 0.85 (SD = 1.46), respectively, a difference being .72. The within group gain scores were not statistically significant (df 29, F = 2.445, p < .129) indicating that the groups did not compare significantly.

When the error scores of the treatment and control group were tested for significant differences between them, the difference was also not significant (df 29, F = .295, p < .591). This indicates that in reading nouns, verbs, and adjectives, neither the treatment group nor the control group improved significantly (see Table 21).

Table 21

Results of Box's Test of Equality of Covariance Matrices for Content Word Reading Error Scores for the "Decoding + Comprehension Deficit" Group

Box's M	7.311
F	2.124
df1	3
df2	1730
Significance	.095

Chapter 5

SUMMARY

The present study was designed and conducted to test the effectiveness of the infusion of remedial reading instruction derived from the Reading Component Model, on the reading achievement of children in LD and Title I classrooms. Twelve teachers from grades 2 through 6 were asked to provide the names of children in their classroom who were experiencing difficulty in reading. One hundred and fifty-one names of children were provided and 146 children were evaluated using differential diagnostic procedures designed to locate and identify the weak component that may cause the suspected deficit.

Complete data were collected from 130 students. Results indicated that 56 students or 43% of the poor readers from both treatment and control groups had weakness in decoding skill, a finding closely commensurate with the literature at 30 – 40% (Gough & Tunmer, 1986). Forty-three students or 33% had weakness in both decoding and comprehension. Typically, students who have a weakness in both decoding and comprehension represent the majority of readers, about 50 – 60% and are referred to as "garden variety poor readers" (Gough et al., 1986). No student was found to have poor comprehension in the presence of good decoding skills, a finding that is discordant with the 10 - 15% comprehension only deficit of the total population of poor readers as

indicated in previous research studies (Stothard et al., 1992; Stothard, 1994; Yuill & Oakhill, 1991). This finding may be explained as an artifact from listening comprehension scores. About half of the students in the study had a diagnosis of learning disabilities which by definition indicates an average or higher IQ score, and listening comprehension and IQ scores are typically commensurate. It is to be noted, however, that this explanation is provided as conjecture only. From among both groups, 31 students or 24% showed no significant deficiency in either decoding or comprehension. The reading difficulty reported by the teachers for these children may be due to noncognitive factors such as poor motivation, attention deficits, and or environmental problems (McKinney, 1988).

When examining the word attack scores of both "decoding deficit only" and "decoding + comprehension deficit" treatment and control groups, neither category nor group made statistically significant gains. These results are interpreted to indicate that the 20 or 10 hours of phoneme awareness and decoding training as delivered in this particular study did not have a more noticeable effect on word attack skill than conventional teaching. The lack of gain may be attributed to age changes but also to insufficient treatment time. It has been noted elsewhere (Lovett, Chaplin, Ransby, & Border, 1990), that extended training in decoding and phonological strategies is needed for severely disabled readers. In fact, it has been shown that up to 80 hours of instruction over a two-year period may be needed to produce significant gains in word identification, spelling, and decoding in context (Truch, 1994). The present study included 20 hours of instruction in decoding strategies for students with a weakness in decoding only, and 10 hours of instruction in decoding strategies for students with a weakness in both decoding

and reading comprehension, obviously not enough time to produce statistically measurable gains. Actually, this time may be considered only adequate time to learn and review basic sounds, with minimal or no time for application into the areas of spelling and sentence writing. Another factor to consider has been noted in longitudinal studies from the National Institute of Child Health and Human Development (NICHD) that indicate that 74% of children who are reading disabled in the third grade will remain disabled at the end of high school (as summarized by Lyon, 1997). Factors contributing to this persistence need to be identified, the subject of current NICHD longitudinal studies (Lyon, 2000). Again, it is noted that phonological awareness instruction as carried out in the present study might not be effective: however, such a conclusion would be discordant with reports of many other research studies, which have shown, that phonological awareness instruction and decoding instruction are effective means for improving reading skill.

On measures of reading comprehension, both "decoding deficit only" and "decoding + comprehension deficit" treatment and control groups, made statistically significant gains when the scores of both groups were combined, though the control groups did significantly better than the treatment groups. The comprehension treatment was designed to provide students with a system of strategies to assist them to reflect on and be aware of contextual structure, the purpose for reading particular text, and ways to summarize and apply information resulting from what was read. These strategies are similar to other strategies that have been developed and successful in aiding students in comprehending text, such as ReQuest [reciprocal questioning](Manzo, 1985), RARE [review, answer, read, and express] and RDPE [read, plan, decide, and evaluate]

(Gearheart, DeRuiter, & Sileo, 1986) and TQLR [tuning in, questioning, listening, and reviewing] (Tonjes & Zintz, 1981). The strategies for this study were different in regard to the use of icons instead of letters as mnemonic devices, in an effort to separate comprehension skill development from decoding skill, and the use of reciprocal teaching to aid student generalization and integration of strategy use into all aspects of daily school work. Though not reflected in the treatment group's comprehension scores, unsolicited feedback from teachers with the treatment groups indicated that students in the treatment group used the system of strategies after the treatment was stopped. Teachers also noted a marked improvement in students' daily attitudes toward classwork that required comprehension skill. Additionally, teachers requested that the researcher provide inservice for the teachers in the forth-coming year in the comprehension strategies provided in this study.

Regarding the effects of the infusion of experimental remedial treatment on function word reading, both treatment groups made statistically significant gains in function word reading. Also on the function word reading, the "decoding deficit only" treatment group made significantly greater gains than the "decoding deficit only" control group. Overall, results indicated that in reading grammatical morphemes, both treatment and control groups gained significantly but not equally.

Change scores in content word reading for both treatment and control groups with a "decoding deficit only" were statistically significant; however, when compared with each other, neither group fared better than the other. When looking at content word scores for both treatment and control groups with a "decoding + comprehension" deficit, neither group improved significantly.

The lack of achievement gains from the treatment group and in some instances better achievement performance from the control group raise questions regarding adequate randomization and treatment integrity. In several instances the control and treatment groups where located in the same school, providing teachers and students with the opportunity to interact, possibly contaminating results. Separating control and treatment groups as "control" and "treatment" schools or using separate school corporations may have alleviated this possible contaminator. In regard to treatment integrity, thorough training with practice and application was provided and monitoring of the treatment was conducted, though more intensive training and monitoring would have been beneficial.

In summary, the Reading Component Model provides a differential diagnostic method that can be used to isolate specific reading problems, and prescribes specific treatments based on the nature of the child's reading deficits. This strategy is expected to yield better results than the conventional undifferentiated instructional approach. As implemented in the present study, however, the component model did not yield the expected results.

Recommendations

Learning to read and reading to learn are two processes that occur simultaneously in a student's daily school life. Both of these processes are extremely complex in regard to the specific cognitive, linguistic, environmental, and instructional factors that foster the development of these processes. Therefore, attempting to determine the etiology for reading achievement failure and success is equally complex.

The Reading Component Model and the diagnostic method based on this model do provide useful and time efficient-diagnostic procedures that can aid in locating a starting point for remediation planning. Additionally, this diagnostic procedure makes it possible to assess large numbers of students as in the present study, which can provide a statistically sound demographic picture of a student population. Though there is statistical comfort in large numbers of students, additional diagnostic information as derived from statewide mandated tests and curriculum-based assessments is more easily collected with a smaller sample size of students. Standardized diagnostic information combined with more qualitative assessment information would result in a more rounded profile of students' reading difficulties and successes. Qualitative information gleaned from formal and informal reading inventories and child and parent interviews that provide retrospective information regarding the student's and family's linguistic history, could provide insight into motivational and environmental factors that have influenced a student's current reading status. Additionally, a review of broad-based assessment results with a student as part of the remediation method, can provide to the student insight into their cognition and reading processes, help demystify the reading process and function for them, and assist the student in the development of a personal plan designed to improve reading performance. As mentioned earlier, adequate time is needed for skill development, through multiple venues of application and practice. Because reading is not a natural process in contrast to oral language development, it does not emerge naturally from interaction with others. Learning to read requires systematic, and explicit instruction provided over a long period of time (International Reading Association & National Association for the Education of Young Children, 1998). A smaller study delivered over

a longer period of time and focusing on the multi-dimensional aspects of reading, could afford the researcher the opportunity to assess more closely the effects of particular remediation strategies that have been shown to be effective in the development of decoding and comprehension skill.

This present study was designed to provide an infusion of specific skill instruction targeted at the identified weak reading component, delivered by specially trained practitioners, in a realistic amount of time that teachers could allot for this purpose. What needs further study however, is a question regarding whether or not isolated or specific skill development is enough to remediate reading skill. Understanding the development of good readers can provide insight into possible techniques or methods that could be used concurrently with specific or isolated skill remediation. In fact, instruction of an isolated reading skill embedded into an age-appropriate context may provide for the integration of remediation into daily classroom work. Particular remedial techniques that could be added to the infusion model in an age-appropriate context would include enhancing student's linguistic awareness through the use of oral readings (being read to), or engaging students in language play. These would reinforce the foundational role that oral comprehension and phoneme awareness play in reading development. Opportunities to practice the application of forming and newly acquired reading skills is essential for skill maintenance and generalization across subject matter. In fact, comprehension strategy instruction needs to be integrated into all subject areas including mathematics, music, art, and physical education, subject areas that traditionally do not call for "comprehension." In addition to integrating comprehension strategies, students need to be given adequate and meaningful background knowledge in a variety of areas in order for

material to be comprehended. Providing students with a variety of "real world" and out-of-the-classroom experiences in which to imbed skills can add greatly to skills development. Additionally, students need to be provided opportunities to explore the goals of reading which would help to demystify the reading process, thereby adding encouragement and ownership regarding student's motivation to develop reading skills.

Early identification and intervention is essential to maximizing treatment success in children who are experiencing reading difficulties. In fact, according to the NICHD (Lyon, 1997) the duration of reading interventions must increase exponentially as children get older, just to achieve the same degree of improvement attainable during kindergarten and the first grade. This implies the need to provide parents, other childcare providers, and teachers (both preservice and inservice) with necessary pedagogical expertise and experience to enhance and support children's early literacy development, in an effort to prevent reading difficulties. It also provides added support for the need for remedial efforts to be intense and longitudinal in nature. Additionally, teachers need to be taught to use regularly and systematically multiple indicators to assess and monitor children's progress in reading development. Such indicators as observation of children's oral language, evaluation of children's performance on authentic reading and writing tasks, and the assessment of students' attitude, motivation, and understanding of their own literacy development can provide childcare providers and teachers with information for planning and adapting instruction (Shepard, Kagan, & Wurtz, 1998).

APPENDIX A

Permission to Conduct Study with Human Subjects

The present study was submitted to the National Institute of Health and Child Development as part of a larger project seeking grant support. The Institutional Review Board, Office of Sponsored Programs granted permission, Indiana State University (see included approval letter and form) for the study of human subjects.

Aaron, P. G...

Indiana State University

Office of Sponsored Programs

Date: May 16, 1997

To: Dr. P.G. Aaron

From: Darron L. Wheeler

Subject: IRB Approval

Your project has been reviewed by the Institutional Review Board (IRB) for the review of research involving human subjects. It has been determined that your project is exempt from further review, so you are free to proceed with your project. This letter and the enclosed IRB Approval Form are your documents confirming the review of your project. You should keep them with your other important project records.

If there are any recommendations in the IRB Comments/Recommended Changes section of the IRB Approval Form, you should consider making these changes before you proceed. These changes are not required, but the recommendations have been made for your protection or convenience. If you make any changes to your study or any documents, please forward copies of all revised documents to the Office of Research so that we may keep your IRB folder current.

The IRB has approved your project as described in the package you submitted. If you make any significant changes to the population, procedures, or other components of the study, the project must be rereviewed. Please submit documentation of all changes so that the appropriate rereview can be completed.

Thank you for your cooperation. If you have any questions, please call Eva Dawson at 3088 or me at 3228.

Terre Haute, Indiana 47809
(812) 237-3088

Aaron, P. Ghanaolivu

Indiana State University - IRB Exempt Research Checklist (04/96)

Date Submitted: 05/27/97

Aaron, P. Ghanaolivu — Dept. Ed./School Psychology — Phone: 812/237-[illegible]
Principal Investigator (type or print)

Title of project: Component Model Based Reading Remediation

Studies involving special populations (pregnant women, fetuses, abortuses, prisoners, mentally disabled, minors, economically or educationally disadvantaged) as subjects will not be accepted as exempt from regulations for the protection of human subjects.

Research activities are exempt when the ONLY involvement of human subjects falls within one or more of the categories below. Check the appropriate categories that apply to your research project:

✓ ____ 1. Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

✓ ____ 2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. Data will be Coded

____ 3. Research in involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) Federal statute(s) require(s) without exception that the the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

____ 4. Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

____ 5. Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads, and which are designed to study, evaluate, or otherwise examine: (i) Public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.

____ 6. Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

The principal investigator indicates that the category(s) checked above strictly apply to the proposed research.

P. G. Aaron — May 12, 1997
Signature of Principle Investigator — Date

APPENDIX B

READING TEST: FUNCTION WORDS

Name_____ Grade_____

Note to the examiner: The subject is asked to read aloud either List 1 or List 2 (down columns from left to right) depending on his age. Children from Grades 1 to 3 are asked to read List 1. Older children are asked to read List 2.

List 1			List 2		
let	nor	once	every	which	during
has	will	soon	never	since	almost
ago	much	ever	could	ahead	before
off	also	upon	along	should	without
why	must	else	while	except	perhaps
any	even	thus	might	behind	although
yet	such		often	though	

READING TEST: CONTENT WORDS

Name_____ Grade_____

Note to the examiner: The subject is asked to read aloud either List 1 or List 2 (down columns from left to right) depending on which list of function words he/she read previously.

List 1			List 2		
cat	man	name	water	story	number
run	bird	page	words	place	school
men	gold	work	house	force	things
boy	book	come	world	figure	picture
say	feet	look	three	letter	morning
dog	back	time	sound	family	distance
she	room		think	father	

Aaron, et al. (1992)

APPENDIX C

Instructional Questionnaire

Remedial instruction in reading involves the use of different instructional approaches, strategies, and materials. For the purposes of this study, remedial reading instructional approaches are broadly classified as either "code-based" or "meaning-based."

Code-based remedial instructional strategies and methods focus on the teaching of word recognition and decoding skills and emphasize the phonics approach. Code-based instructional approaches, generally: (a) emphasize explicit instruction in learning to read; (b) involve using exercises, drills, and worksheets; (c) use basal readers which may contain literary selections as the materials for instruction; and (d) provide skills training in word recognition for comprehension. The Hermann, Bannatyne, and Linguistic Phonics methods are examples of code-based approaches.

Meaning-based instructional methods and strategies focus on teaching text comprehension and emphasize meaning. Meaning-based instructional approaches, generally: (a) are less structured than the phonics approach; (b) use words, sentences, and whole texts; (c) emphasize comprehension of meaning as the goal of instruction; and (d) use literature selections as the main material for instruction. The Language Experience Method and the Whole Language Approach are examples of meaning-based approaches.

If you would please respond to the following questions regarding the remedial reading instruction to be and is being used in your classroom to provide remedial reading instruction to students, during the 1997 - 1998 academic year.

1. The instructional approach, generally, could be described as (circle one only):

   Code-based Meaning-based Code-based and Meaning-based (mixed)

2. Is a specific program (such as Hermann or Bannatyne) used in your remedial instruction (circle one only): Yes No

3. If the response to question # 2 is Yes, please specify the name of the remedial program:

_____

4. The average number of *minutes per day* spent by a student in remedial reading in your classroom per day is: _____.

5. The average number of *days each week* spent by a student in remedial reading in your classroom is: _____.

Please continue on the next page.

6. Please note below any additional comments of suggestions that you may have:

_____

_____

_____

_____

_____

_____

_____

_____

Questionnaire completed by: _____

Name of School: _____

Thank you for your time and expertise in completing this questionnaire. If you have any questions, please do not hesitate to contact Sonja Frantz at (H) 765/665-3686.

Instructional Questionnaire Results – Control Group

Teachers	Instructional Approach	Specific Program Used	Specific Remedial Program	Average Number Minutes per Day	Average Number Days per Week	Comments
CL	Mixed	Yes	Hermann Merrill Linguistic SRA Basic Reading Matt Language	50 minutes	5	"Each student is given instruction in his/her weak area using materials that best suits The need. A combination of materials may be used."
KW	Mixed	Yes	4-Block (Word Building, Self-Selected Reading)	60	5	
RY	Code-based	Yes	Hermann Merrill Linguistics	30 – 40	5	
LG	Mixed	Yes	4-Block (Word Building, Self-Selected Reading)	60	5	
DZ	Mixed	Yes	4-Block (Word Building, Self-Selected Reading)	60	5	
SS	Mixed	Yes	Hermann	60	5	"Special Education reading services are not exactly remediation but involve many of the same programs. The programs must be delivered at a variety of paces. All learning styles must be considered over program selection. It has been nice working with you!

Instructional Questionnaire Results –Treatment Group

Teachers	Instructional Approach	Specific Program Used	Specific Remedial Program	Average Number Minutes per Day	Average Number Days per Week	Comments
LK	Mixed	Yes	Hermann	30	5	
LM	Mixed	Yes	4-Block (Word Building, Self-Selected Reading)	60	5	
MMR	Mixed	Yes	4-Block (Word Building, Self-Selected Reading)	60	5	
BH	Mixed	Yes	4-Block (Word Building, Self-Selected Reading)	60	5	
LN	Code-based	Yes	Hermann	25	5	
CS	Mixed	Yes (grades 1, 2, & 3) No (grades 5 & 6)	Hermann	30	4 (5, see comments)	"On the fifth reading instruction day we use regular classroom materials from Science, Soc. St. or Health to read and discuss. We try to drill on comprehension and vocabulary that day. This is the 1st year we've done this. It was done due to scheduling difficulties with different classes."

APPENDIX D

Teacher Demographic Information

Teacher (please circle one: control group or treatment group)

Teacher initials:

Years of teaching (with grade):

Years of teaching reading (with grade):

Highest degree (plus credit hours):

License area:

License endorsements:

Specialized training:

Teacher Demographic Information – Control Group

Teacher	School	Years of teaching (with grade)		Years of teaching reading (with grade)	
CL	ES	7	Special Education	7	Special Education
KW	FP	14	3rd grade; 10 years 6th grade	14	3rd grade; 10 years 6th grade
DZ	FP	1	6th grade	1	6th grade
LM	FP	14	(combinations of 2nd– 6th)	14	(combinations of 2nd – 6th)
RY	VB	13	Special Education (Multi-categorical)	13	Special Education
SS	M	6	General Education	6	General Education

Teacher	Highest degree (plus credit hours)	License area	License endorsements	Specialized training
CL	Masters degree plus 30 hours	Elementary Special Education	Mental Retardation Learning Disabled Emotionally Handicapped	
KW	Master of Arts (Teaching) plus 3 hours (gifted & talented)	K-8; 7 & 8 non-departmentalized		3 hours gifted & talented plus workshops
DZ	Bachelors degree plus 36 hours	Preschool-8th grade		
LM	Masters degree plus 45 hours	1-6; 7 & 8 Non-departmentalized		Administration
RY	Masters degree plus 3 hours	Special Education (K-12)	Learning Disabled Mild Handicaps	Hermann Reading
SS	Bachelors degree	General Education (1-6) 7 & 8 nondepartmentalized	Learning Disabled (K-12) Mild Handicaps (K-12)	

Teacher Demographic Information – Treatment Group

Teacher	Years of teaching (with grade)		Years of teaching reading (with grade)	
MMR	1, 5th grade; 7 years, upper elementary		1, 5th grade; 7 years, upper elementary	
BH	20	2nd grade	20	2nd grade
CS	16	Special Education (Multi-categorical)	16	Special Education (Multi-categorical)
LK	10	Special Education (Multi-categorical)	10	Special Education (Multi-categorical)

Teacher	Highest degree (plus credit hours)	License area	License endorsements	Specialized training
MMR	Master of Arts (Teaching)	K-8		Whole Language Four Block
BH	Masters degree	Elementary Education	Special Education	
CS	Masters degree	Special Education (K-12)	Mentally Retarded Learning Disabled Emotionally Handicapped	
LK	Masters degree plus 15 hours	Special Education (K-12)	Mentally Retarded Learning Disabled Emotionally Handicapped Severe Disabilities	

APPENDIX E

Reading Component-Based Remedial Instruction:

Poor Word Recognition Treatment

The Auditory Discrimination in Depth (ADD) (1975) program was the method used in this study to provide the instructional materials for the poor word recognition treatment. ADD is a multisensory remediation program that assists students of all ages to develop auditory-perceptual skills basic to reading, spelling, and articulation/phonology. This program focuses on integrating sensory feedback from the eye, ear, and mouth to track the correspondence between the sound patterns of oral language and the alphabetical patterns of language. Students learn to identify and classify speech sounds, progressing from isolated sounds, to sequences of sounds in nonsense syllables, to real words.

Each treatment lesson for this study was designed for a block of approximately 15 minutes, for a total of 80 instructional blocks that equated to 20 hours of instruction. Instruction was carried out in three phases:

Phase I: Phoneme Awareness

Phase II: Phoneme-Grapheme association

Phase III: Sight-word reading through sentence reading, spelling, and writing

Phase I: Phoneme Awareness Training - Aural

Objective: Student will gain an awareness of sounds in speech (phonemes).

1. Consonant sounds and vowel sounds are introduced through several modalities
2. Consonant and vowel sounds are related to colored blocks

3. Rhyming and segmentation exercises are conducted

4. Phonemes are manipulated in the spoken word that includes the deletion and substitution of words.

Phase II: Development of Grapheme-Phoneme Relationship Knowledge

Objective: Student will gain knowledge of grapheme-phoneme relationships

1. Colored blocks are related to sounds (1 block = 1 phoneme)

2. A letter is related to a sound (1 letter = 1 phoneme)

3. Letters are related to sounds (bigrams, syllables = pronunciation)

4. Letters are related to sounds (multisyllabic pronunciation)

Phase III: Word and Sentence Generation

Objective: Students will produce words and sentences

1. Students will produce words starting with given sound patterns, these are written in the student's notebooks

2. The teacher will use these words for student's spelling tests

3. These spelling words are used to produce sentences for writing and reading.

Poor Word Recognition Lesson Plans

These lesson plans are based on the sequence B demonstrated on page 3 of Book 2 - Lindamood. Each lesson is designed to take approximately 15 minutes.

Lesson 1

Goal - Students will meet the instructor. Students will be given the student packs to personalize.

Materials - Lindamood student packs.

Lesson - Timeframe 15 minutes

Evaluation - All students will have a Lindamood pack, and will know the instructor.

Lesson 2

Goal - Students will have a clear understanding of the multi-sensory method.

Materials - Object for selective listening activity (pg. 12).

Lesson - Timeframe 15 minutes

Present concept (pg. 8 & 9) and Selective Listening (pg. 11)

Use activity 5 (pg. 12) to highlight selective listening.

Evaluation - All students will have a clear understanding of the multi-sensory method.

Lesson 3

Goal - Students will be introduced to the concept of consonant pairs.

Students will be introduced to the concept of noisy and quiet sounds.

Student will discover *Lip-Poppers*.

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Small mouth form pictures and letters from consonant pairs (from student packets).

Lesson - Timeframe 5 minutes

Present concept of consonant pairs (pg. 19).

Timeframe 5 minutes

Present concept of noisy and quiet sounds (pg. 20-21).

Timeframe 5 minutes

Introduction of sounds, labels, mouth forms and letters. *Lip Poppers* (pg. 21-23).

After students have identified each individual sound, ask them to think of words that contain that sound.

Evaluation - In review all students should understand concepts.

Lesson 4

Goal - Students will review sounds learned during the previous lesson.

Students will discover *Tip-Tappers & Scrapers.*

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Small mouth form pictures and letters from consonant pairs (from student packets).

Lesson - Timeframe 10 minutes

Introduction of sounds, labels, mouth forms and letters.

Tip-Tappers & Scrapers (pg. 23-26).

After students have identified each individual sound, ask them to think of words that contain that sound.

Timeframe 5 minutes

Review on pg. 26.

Evaluation - In review all students should understand concepts.

Lesson 5

Goal - Students will review sounds learned during the previous lesson.

Students will discover *Lip-Coolers & Tongue Coolers.*

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Small mouth form pictures and letters from consonant pairs (from student packets).

Lesson - Timeframe 5 minutes

Review all sounds learned using review on pg. 26.

Timeframe 10 minutes

Introduction of sounds, labels, mouth forms and letters.

Lip-Coolers & Tongue Coolers (pg. 27-28).

After students have identified each individual sound, ask them to think of words that contain that sound.

Evaluation - All students should be able to make sound, label, and letter associations. (Students may not demonstrate mastery at this level, but should demonstrate understanding).

Lesson 6

Goal - Students will review all sounds learned.

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Pencil and paper for each child.

Lesson - Timeframe 15 minutes

Review all sounds learned using Activity 1 on pg. 33. Use both oral and pencil-and-paper techniques.

Evaluation - All students should be able to make sound, label, letter associations.(Students may not demonstrate mastery at this level, but should demonstrate understanding).

Lesson 7

Review Activity 2 & 3 pg. 35 - Roll Call and Dismissal. Begin integrating these activities into students leaving and entering the classroom, or when they are picked up from the regular classroom. Using walking, gathering, and dismissal times to review sounds, els, mouth forms, and letters.

Goal - Students will discover *Skinny* and *Fat* sounds.

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Small mouth form pictures and letters for consonant pairs (from student packets).

Lesson - Time frame 10 minutes

Introduction of sounds, labels, mouth forms, and letters.

Skinny and *Fat* sounds (pg. 28)

After students have identified each individual sound, ask them to think of words that contain that sound.

Time frame 5 minutes

Review on pg. 26.

Evaluation - All students should be able to make sound, label, and letter associations. (Students may not demonstrate mastery at this level, but should demonstrate an understanding)

Lesson 8

Goal - Students will review sounds learned in Lesson 7

Students will discover *Fat-Pushed* sounds.

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Small mouth form pictures and letters for consonant pairs (from student packets).

Index cards to be used for Activity 3, pg. 33.

Lesson - Time frame 5 minutes

Introduction of Activity 3, pg. 33 Detecting Right and Wrong by reviewing *Skinny* and *Fat-Pushed* sounds.

Time frame 5 minutes

Introduction of sounds, labels, mouth forms, and letters.

Skinny and *Fat* sounds (pg. 28).

After students have identified each individual sound, ask them to think of words that contain that sound.

Time frame 5 minutes

Review *Skinny, Fat* and *Fat-Pushed* sounds using Detecting Right and Wrong activity.

Evaluation - All students should be able to make sound, label, and letter associations. (Students may not demonstrate mastery at this level, but should demonstrate an understanding)

Lesson 9

Goal -Students will review sounds learned.

Students will be introduced to the concept of groups.

Students will discover *Nose* sounds.

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Small mouth form pictures and letters for consonant pairs (from student packets).

Lesson - Students should be reviewing sounds learned during gathering and dismissal times.

Time frame 10 minutes

Students will be introduced to the concept of groups (pg. 38).

Nose sounds (pg. & 40).

After students have identified each individual sound, ask them to think of words that contain that sound.

Evaluation - All students should be able to make sound, label, and letter associations. (Students should be gaining mastery for sounds learned at the beginning, they may not demonstrate mastery for new sounds yet, but should demonstrate an understanding).

Lesson 10

Goal - Students will review sounds learned.

Students will discover *Windy Sounds*.

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Small mouth form pictures and letters for consonant pairs (from student packets).

Index Cards for Detecting Right and Wrong (Activity 3, pg. 33).

Lesson - Students should be reviewing sounds learned during gathering and dismissal times.

Time frame 8 minutes

Students will discover *Windy Sound*, pg. 40 - 41.

After students have identified each individual sound, ask them to think of words that contain that sound.

Time frame 7 minutes

Review *Nose* and *Windy Sounds* by playing Detecting Right and Wrong (Activity 3, pg. 33).

Evaluation - All students should be able to make sound, label, and letter associations. (Students should be gaining mastery for sounds learned at the beginning, they may not demonstrate mastery for new sounds yet, but should demonstrate an understanding).

Lesson 11

Goal - Students will review sounds learned.

Students will discover *Lifters.*

Materials - Large mouth form pictures for consonant pairs.

Large consonant letters.

Small mouth form pictures and letters for consonant pairs (from student packets).

Materials for Paper Bag Drawing (see Phoneme Awareness Game Directions).

Lesson - Students should be reviewing sounds learned during gathering and dismissal times.

Time frame 5 minutes

Students will discover *Lifters* (pg. 42).

After students have identified each individual sound, ask them to think of words that contain that sound.

Time frame 10 minutes

Introduce Paper Bag Draw. Use only *Lifter* labels, letters, mouth forms and descriptions.

Evaluation - All students should be able to make sound, label, and letter associations. (Students should be gaining mastery for sounds learned at the beginning, they may not demonstrate mastery for new sounds yet, but should demonstrate an understanding).

Lesson 12

Goal - Students will review sounds learned.

Students will discover *Borrowers.*

Materials - Large consonant letters.

Small mouth form pictures and letters for consonant pairs (from student packets).

Chalk board or Dry Erase Board to write on.

Lesson - Students should be reviewing sounds learned during gathering and dismissal times.

Time frame 15 minutes

Students will discover *Borrowers* (pg. 43).

After students have identified each individual sound, ask them to think of words that contain that sound.

Evaluation - All students should be able to make sound, label, and letter associations. (Students should be gaining mastery for sounds learned at the beginning, they may not demonstrate mastery for new sounds yet, but should demonstrate an understanding).

Lesson 13

Goal - Students will review sounds learned.

Materials - Material for Bingo Game (pg. 47). Student cards are in student packets.

Assure that students are not all using the same bingo board.

Lesson - Time frame 15 minutes

Play Bingo.

Evaluation - Students should be able to demonstrate knowledge of letters, sounds, labels, and mouth forms when playing the game.

Modification - play with partners. Encourage students to help each other discover which letters should be covered.

Lesson 14

Goal - Students will review sounds learned.

Students will be introduced to the concept of the Vowel Circle.

Materials - Large Vowel Circle

Small vowel circle (from student packets).

Lesson - Students should be reviewing sounds learned during gathering and dismissal times.

Time frame 15 minutes

Students will be introduced to the Vowel Circle concept (pg. 50-52). Lesson should stop on pg. 52 "...you might like to stop at this point..."

Evaluation - All students should have a basic understanding of the concept of the Vowel Circle.

Lesson 15

Goal - Students will review sounds learned.

Students will be introduced to Vowel Sounds.

Materials - Large Vowel Circle, Vowel Circle Colors, Vowel Mouth Form Pictures.

Small vowel circle, vowel circle colors and vowel mouth form pictures (from student packets).

Lesson - Students should be reviewing sounds learned during gathering and dismissal times.

Time frame 15 minutes

Students will be introduced to Vowel Sounds (using colors only) concept (pgs.52-65). Lesson should stop on pg. 56 "...this is a good temporary stopping point..." Labels for the sounds should be included.

Students should been focusing on sounds not letter names - encourage this at this point.

Evaluation - All students should have a basic understanding of the concept of the Vowel Circle.

Lesson 16

Goal - Students will review sounds learned.

Students will be introduced to sounds with the *Sliders* label.

Students will practice gross discrimination between vowel labels.

Materials - Large Vowel Circle, Vowel Circle Colors, Vowel Mouth Form Pictures.

Small vowel circle, vowel circle colors and vowel mouth form pictures (from student packets).

Vowel Letters

Paper Bags

Evaluation - All students should be able to identify what label a vowel sounds in the Vowel Circle.

Lesson 17

Goal - Students will associate vowel symbols (letters) with vowel sounds.

Materials - Large vowel circle

Small vowel letters (that fit into circle)

Small vowel circle, vowel circle letters and vowel mouth form pictures (from student packets)

Tape

Pink vowel letters

Pictures of vowel mouth forms

Lesson - Time frame 10 minutes

Introduce vowel symbols (pg. 57 - 62) complete in order most appropriate for class.

Allow students to tape letters in place on individual vowel circles.

Time frame 5 minutes

Review vowel symbols learned using checkout activity on pg. 64.

Evaluation - Students should have a basic concept of letter sound associations.

Lesson 18

Goal - Students will associate vowel symbols (letters) with vowel sounds.

Materials - Large vowel circle

Small vowel letters (that fit into the circle)

Small vowel circle, vowel circle letters and vowel mouth form pictures (from student packets)

Tape

Lesson - Time frame 10 minutes

Introduce vowel symbols (pg. 57 - 62) not introduced in Lesson 17.

Allow students to tape letters in place on individual vowel circles.

Time frame 5 minutes

Review vowel symbols learned using checkout activity on pg. 64.

Evaluation - Students should have the basic concept of letter sound associations.

Lesson 19

Goal - Students will review vowel symbols.

Students will reinforce knowledge of sound symbol associations.

Materials - Large Vowel Circle with symbols (letters) taped in place.

Small pre-cut index cards with tape.

Dark marker or pen.

Lesson - Time frame 15 minutes

"Key Words" reinforcing activity (pg. 64)

Allow students to write key words on vowel circle.

Evaluation - Students will have key words to that correspond with vowel sounds/symbols.

Lesson 20

Goal - Students will review vowel sounds.

Students will reinforce knowledge of sound symbol associations.

Materials - Large Vowel Circle with symbols (letters) taped in place.

Small pre-cut index cards with tape.

Dark marker or pen

Lesson - Time frame 15 minutes

Complete "Key Words" reinforcing activity (pg. 64) started during Lesson 19.

Allow students to write key words on vowel circle.

Evaluation - Students will have key words that correspond with vowel sounds/symbols.

Lesson 21

Goal - Students will review all vowel and consonant sounds, letters, and labels learned.

Materials - Student Bingo Boards

Bingo Markers

Lesson - Time frame 15 minutes

Play Bingo with students (pg. 65)

Evaluation - All students will be able to make sound, letter, label, picture associations.

Lesson 22

Goal - Students will demonstrate mastery of sound, letter, label, picture associations.

Materials - Medium size paper bags or several small paper bags

Playing cards

Vowel Circle (for reference)

Lesson - Time frame 15 minutes

Students will play *Paper Bag Draw* using both vowels and consonants

Students may play in a large group, or pairs as appropriate for the class

Evaluation - All students will be able to make sound, letter, label, picture associations.

Lesson 23

Goal - Students will be reminded of the concept of selective listening

Materials - Objects for Selective Listening Activity 5 or 7 (pg. 12 or 13)

Word List labeled "Listening for Sounds"

Lesson - Time frame 5 minutes

Remind students of Selective Listening discussed in Lesson 3. Discuss ability to use how letter sounds feel along with selective listening to check sounds.

Time frame 10 minutes

Tell students that in this activity they will be listening for *sounds* not number of letters. Say a word out loud for the students, have them identify (with my putting up the right number of fingers or saying out loud) the number of sounds they hear in a word. For example: cat - 3; shoe - 2. Use the word list provided.

Evaluation - Students will be reminded of the need for selective listening, and will be able to listen for sounds in words.

Lesson 24

Goal - Students will practice listening for the number of sounds in words.

Materials - Word List Labeled "Listening for Sounds - single syllable"

Lesson - Time frame 15 minutes

Play "Draw a Card" for selective listening. Use the word list provided.

Evaluation - Students will be able to listen for sounds in words.

Lesson 25

Instructor Preparation - Read Tracking Speech Sounds and all of *Color-Encoding Isolated Sounds* (pg. 68-77) before teaching this lesson. It is important to note that letters will not be used during the color-encoding. The focus is on sounds and labels with color representation. If helpful you can explain to students that eventually they will be using letters and letter names, however stay focused on sounds, labels, and color representation.

Goal - Students will understand the concept of color-encoding isolated sounds.

Materials - Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Lesson - Time frame 15 minutes

Present the Concept of Color-Encoding isolated sounds (pg. 72 - 75).

Evaluation - Students should have an understanding of the concept of color-encoding. Most students will not be working at the mastery level yet.

Lesson 26

Goal - Students will practice color-encoding isolated sounds.

Materials - Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Set of student colored paper squares for each student (from student packets).

Lesson - Time frame 5 minutes

Restate the concept of color-encoding. Or, finish presenting concept if difficulty arose (pg. 72 - 75).

Time frame 10 minutes

Have students work through patterns of isolated sounds (pg. 78 - 79) using individual color squares. If students are at different ability levels, pair students with greater and lesser ability together to work on patterns.

Evaluation - Students should be color-encoding with increasing accuracy.

Lesson 27

Goal - Students will practice color-encoding isolated sounds.

Materials - Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six difference colors.

Set of student colored paper squares for each student (from student packets).

Medium size paper bag.

Color-encoding cards for *Paper Bag Draw*.

Lesson - Time frame 2 minutes

Restate the concept of color-encoding, ask student to explain representation of sounds (pg. 72 first paragraph).

Time frame 13 minutes

Play *Paper Bag Draw* for Color-Encoding (see R.E.A.D. game directions).

Evaluation - Students would be color-encoding with increasing accuracy.

Lesson 28

Goal - Students will be introduced to color-encoding isolated sounds.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Set of student colored paper squares for each student (from student packets).

Lesson - Time frame 15 minutes

Present the concept of color encoding syllables (pg. 81-83). Teach until, "you may want to stop at this point" on pg. 83.

Evaluation - Students will have a basic concept of color-encoding syllables.

Lesson 29

Goal - Students will gain a deeper understanding of color-encoding syllables.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - a set of 24 squares, four each of six different colors.

Lesson - Time frame 15 minutes

Present concept of color-encoding syllables starting on pg. 83 where Lesson 28 ended. Present through pg. 84 "this is a good point to take a break."

Evaluation - Students will be able to color-encode simple syllables.

Lesson 30

Goal - Students will gain skill in color-encoding simple syllables.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - a set of 24 squares, four each of six different colors.

Small mouth form pictures (from student packs)

Small colored paper squares (from student packs)

Lesson - Time frame 15 minutes

Have students practice color-encoding simple syllable sets (pg. 87) using individual student squares and mouth forms. Demonstrate with large mouth forms and colored squares if necessary. Have students work in pairs if they are having difficulty.

Evaluation - Students will be gaining proficiency at color-encoding simple syllables.

Lesson 31

Goal - Students will practice color-encoding simple-syllable sets.

Materials - Simple-syllable sets pg. 87.

Paper for each student

Crayons or markers for each student

Lesson - Time frame 15 minutes

Activity 1 on pg. 86.

Evaluation - Students will be gaining proficiency at color-encoding simple syllables.

Lesson 32

Goal - Students will practice color-encoding simple-syllable sets.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Small mouth form pictures (from student packs)

Small colored paper squares (from student packs)

Lesson - Time frame 15 minutes

Divide students into pairs. Group students to allow more advanced students to assist students who are still struggling. Present simple-syllable sets and have students color-encode the sets.

Evaluation - Students will be gaining proficiency at color-encoding simple syllables.

Lesson 33

Goal - Students will gain skill in color-encoding simple-syllable.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Small mouth form pictures (from student packs)

Small colored paper squares (from student packs)

Lesson - Time frame 15 minutes

Divide students into two teams. Have teams practice color-encoding simple syllable sets (pg. 87). Give points as is appropriate for your group. Assure that each student is required to color-encode.

Evaluation - Students will be gaining proficiency at color-encoding simple syllables.

Lesson 34

Goal - Students will practice simple-syllable sets.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Small mouth form pictures (from student packs)

Small colored paper squares (from student packs)

Lesson - Time frame 15 minutes

Divide students into pairs. Group students to allow more advanced students to assist students who are still struggling. Present simple-syllable sets and have students color-encode the sets. Begin presenting real words both individually and in syllables (sets may mix real and nonsense words (see pg. 124-125 for ideas).

Evaluation - Students will be gaining proficiency at color-encoding simple syllables.

Lesson 35

Goal - Students will gain skill in color-encoding simple-syllable.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Small mouth form pictures (from student packs)

Small colored paper squares (from student packs)

Lesson - Time frame 15 minutes

Divide students into two teams. Have teams practice color-encoding simple syllable sets (pg. 87) and real words and real word sets (pg. 124-125). Give points as is appropriate for your group. Assure that each student is required to color-encode.

Evaluation - Students will be gaining proficiency at color-encoding simple syllables.

Lesson 36

Goal - Students will practice listening for sounds in words.

Materials - Word List labeled "Listening for Sounds"

Lesson - Time frame 15 minutes

Tell students that this activity will be listening for number sounds, not number of letters. Say a word out loud for the students, have them identify (either by putting up the right number of fingers or saying out loud) the number of sounds they hear in a word. For example: cat - 3; shoe - 2.

Evaluation - Students will be able to listen for sounds in words.

Lesson 37

Goal - Students will be presented the concept of syllable chains.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Lesson - Time frame 15 minutes

Present the end of the syllable chains (pg. 88-89) through "substitution, vowel"

Evaluation - Students will understand the concept of syllable.

Lesson 38

Goal - Students will be presented the end of syllable chaining (pg. 89-91).

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Lesson - Time frame 15 minutes

Present the end of the syllable chains lesson (pg. 89-91)

Evaluation - Students will understand the concept of syllable chaining including substituting vowels, consonants and the use of repetition.

Lesson 39

Goal - Students will practice syllable chains as a group.

Materials - Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Lesson - Time frame 15 minutes

Simple-Syllable Chains (pg. 94)

Present practice activity (pg. 92), practice with students as a group, having all students provide answers.

Evaluation - Students will understand the concept of syllable chaining including substituting vowels, consonants and the use of repetition.

Lesson 40

Goal - Students will practice syllable chains.

Materials - Small colored paper squares (from student packs)

Simple-Syllable Chains (pg. 94)

Lesson - Time frame 15 minutes

Students will practice syllable chains using practice activity on pg. 92. Present task as a group, allow students to work in pairs to color-encode chains.

Evaluation - Students will gain their proficiency to color-encode syllable chains.

Lesson 41

Goal - Students will gain in their ability to color-encode simple syllable chains.

Materials - Small colored paper squares (from student packs)

Simple-Syllable Chains (pg. 94)

Lesson - Time frame 15 minutes

Students will play *Paper Bag Draw* using simple-syllable chains from pg. 94-95. Each student should provide one manipulation of a simple-syllable chain for each turn.

Evaluation - Students will gain their proficiency to color-encode syllable chains.

Lesson 42

Goal - Student will be accurate at color-encoding syllable chains

Materials - Small colored paper squares (from student packs)

Simple-Syllable Chains (pg. 94-95)

Index cards will be the first simple-syllable pattern (18 teacher-made)

Lesson - Time frame 15 minutes

On an index card write the first pattern at the tip of each vertical column on pg. 94 and 95. Spread the index cards out face down. Have a student pick-up a card. Begin with the pattern the student picked up. Have all students color-encode that pattern and each

pattern in the vertical column. Alter all patterns in one column have been color-encoded have another student draw a card.

Evaluation - All students are able to encode two chains with 100% accuracy.

Lesson 43 & 44

Goal - Students will be presented with the concept of color-encoding complex syllables.

Materials - Large mouth form pictures

Colored paper squares, 3-inch size - 1 set of 24 squares, four each of six different colors.

Lesson - Time frame 15 minutes

Present concept beginning on pg. 96. Follow sample dialogue as necessary until entire concept is presented (pg. 96-102).

Evaluation - Students will gain proficiency to color-encode syllable chains.

Lesson 45

Goal - Students will practice complex syllable chains

Materials - Small colored paper squares (from student packs)

Complex-Syllable Chains (pg. 104-106)

Lesson - Time frame 15 minutes

Students will practice syllable chains using practice activity on pg. 103. Present task as a group, allow students to work in pairs to color-encode chains.

Evaluation - Students will gain proficiency to color-encode syllable chains.

Lesson 46

Goal - Students will gain skill to color-encode complex syllable chains.

Materials - Small colored paper squares (from student packs)

Complex-Syllable Chains (pg. 104-106)

Lesson - Time frame 15 minutes

Students will play *Paper Bag Draw* using complex-syllable chains from pg. 104-106. Each student should provide one manipulation of a complex-syllable chain for each turn.

Evaluation - Students will gain proficiency to color-encode syllable chains.

Lesson 47

Goal - Students will be accurate at color-encode syllable chains.

Materials - Small colored paper squares (from student packs)

Complex-Syllable Chains (pg. 104-105)

Index cards will be the first complex-syllable pattern (18 teacher made)

Lesson - Time frame 15 minutes

On an index card write the first pattern at the *top* of each vertical column on pgs.104 and 105. Spread the index cards out face down. Have a student pick-up a card. Begin with the pattern the student picked. Have all students color-encode that pattern and each pattern in the vertical column. After all patterns in one column have been color-encoded have another student draw a card.

Evaluation - All students are able to encode two chains with 100% accuracy.

*****

Teacher preparation - Read: Spelling (Encoding) pgs.108-115 and Decoding (Reading) pg. 147-154. Please make a special note of the section Overlap to Reading on pg. 109 and Integration of Spelling and Reading. Note on pg. 110, multi-syllable encoding, the lesson plans will not cover multi-syllable encoding.

Lessons are presented combining two lessons at a time. This is to assist in establishing that reading and spelling are related tasks.

Lesson 48 & 49

Goal - Students will review the concept of encoding (spelling) and decoding (reading)

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Lesson - Time frame 15 minutes for each lesson - total 30 minutes

Present the concept of spelling and reading pg. 108-112 and 148-154

Use both nonsense patterns pg. 122 & 162 and real patterns 125 & 159

Evaluation - Students will have an understanding of the concept of encoding and decoding with letters.

Lesson 50

Goal - Students will generate simple syllable words for encoding/decoding practice

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes

Assist students in generating simple words that contain the sounds and alternatives that are familiar to them. Choose 3 words that are frequently in language use. Tell students to try and remember the spelling of these words for the next lesson time. During the next lesson give a quick "spelling test" to see if

students remember words. The goal is to get students to start thinking about spelling. this activity should be used daily as the beginning review.

Evaluation - Students will begin thinking about the spelling of words.

Lesson 51 & 52

Review - with previously generated word list (Lesson 50)

Goal - Students will transition moving the *e* for long vowels to the end of patterns.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes

Present moving the *e* cue for encoding (pg. 112) and decoding (pg. 154)

Time frame 15 minutes

Practice concept with Activity 1a (pg. 116) and Activity 1a (pg. 125)

Evaluation - Students will have the concept of the *e* at the end for long vowels.

Lesson 53-54

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will establish the *"borrower" C* as an alternative for /k/ and /s/.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes - 30 minutes total

Present concept of *"borrower" C* as an alternative for /k/ and /s/ on pg. 113 and pg. 155.

Evaluation - Students will have the concept that c is alternative for /k/ and /s/.

Lesson 55

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will practice *e* at the end in long-vowel sounds.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes

Practice using Activity 2 (pg. 116) and Activity 1a (pg. 155)

Evaluation - Students will have gained proficiency in using *e* at the end of a word.

Lesson 56

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will practice *c* as an alternative for /k/ and /s/.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes

Practice using Activity 2 (pg. 116) and Activity 1b (pg. 155)

Evaluation - Students will have gained proficiency in using *c* is alternative for /k/ and /s/.

Lesson 57

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will practice the e cue and the *c* alternative.

Materials - Paper and pencil for each student

Medium size paper bag

Index cards with decoding and encoding *real* words (decoding cards should be one color and encoding cards should be another color).

Lesson - Time frame 15 minutes

Play *Paper Bag Draw* combining both the decoding and encoding activity. Only *real* words should be used and should focus on the *e* cue and *c* as an alternative taught in Lessons 50-53.

Evaluation - Students will have gained proficiency in using *c* is alternative for /k/ and /s/ and the *e* cue.

Lesson 58

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will be introduced to the concept of the "borrower" *y* as an alternative spelling for /ee/, /I/, and /ie/.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes

Present the concept of the "borrower" *y* as an alternative spelling for /ee/, /I/, and /ie/ (pg. 115).

Evaluation - Students will have been introduced to the concept of the "borrower" *y* as an alternative spelling for /ee/, /I/, and /ie/.

Lesson 59

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will practice encoding and decoding the "borrower" *y* as an alternative spelling for /ee/, /I/, and /ie/.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes

Present Activity 2 (pg. 116) and Activity 2 (pg. 156) word lists presented on pg. 119.

Evaluation - Students will gain proficiency in using *y* as an alternative for /ee/, /i/, and /ie/.

Lesson 60 & 61

Review - If using lesson to start a new day, review with previously generated word list.

Goal -Introduce the concept of *g* as an alternative spelling for /j/

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes for each lesson - 30 minutes total

Present and practice using *g* for /j/ using Activity 2a (pg. 117) and Activity 2a (pg. 156).

Evaluation -Students will be introduced the concept of *g* as an alternative spelling for /j/

Lesson 62 & 63

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Student will practice using encoding and decoding patterns they have learned thus far.

Materials - Paper and pencil for each student

Medium size paper bag

Index cards with decoding and encoding real words (decoding cards should be one color and the encoding cards should be another color).

Lesson - Time frame 30 minutes

Play *Paper Bag Draw* combing both the decoding and encoding activities. Only real words should be used.

Evaluation - Students will have gained proficiency in patterns learned thus far.

Lesson 62 & 63

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will be introduced to the "two vowels go walking" concept.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes for each lesson - 30 minutes total

Present concept with Activity 2b (pg. 117) and Activity 2b (pg. 157).

Evaluation - Students will have gained an understanding of the "two vowels go walking" rule as an alternative way to signal long vowels.

Lesson 66 & 67

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will be introduced to the concept *x* is an alternative spelling for /ks/.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes for each lesson - 30 minutes total

Present concept with Activity 1 (pg. 117) and Activity 1a (pg. 158).

Evaluation - Students will have gained an understanding of the concept of *x* is an alternative spelling for /ks/.

Lesson 68 & 69

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will be introduced to the concept of the "borrower" *qu* as an alternative spelling for /kw/.

Materials - Consonant (yellow) and Vowel (pink) symbols

Colored paper squares for encoding

Mouth Form Pictures

Paper and pencil for each individual student

Lesson - Time frame 15 minutes for each lesson - 30 minutes total

Present concept with Activity 1b (pg. 118) and Activity 1b (pg. 158).

Evaluation - Students will have gained an understanding of the concept of ***qu*** is an alternative spelling for /kw/.

Lesson 70 & 71

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will practice using encoding and decoding patterns they have learned

Materials - Pencil and paper for each student

Medium size paper bag

Index cards with decoding and encoding *real* words (decoding cards should be one color and the encoding cards should be another color).

Lesson - Time frame 30 minutes

Play *Paper Bag Draw* combing both the decoding and encoding activities. Only *real* words should be used.

Evaluation - Students will have gained proficiency in patterns learned.

Lesson 72

Review - If using lesson to start a new day, review with previously generated word list.

Goal - Students will practice using encoding and decoding patterns they have learned thus far.

Materials - Word cards for encoding and decoding (Teacher-made index cards)

Paper and pencil for each student

Paper and marker for score board

Lesson - Time frame 30 minutes

Divide students into two teams. Have students take turns drawing from a deck of "word cards" and then either decode or encode the word. Words should be real words. Cards should be marked on the back to establish is a word is to be decoding or encoded prior to student seeing the word. 2 points are given to the team if a student gets the answer correct. 2 points are given to the team if is the student cannot answer the question but the team uses teamwork to discover the correct answer with the student who could not answer the question originally.

Evaluation - Students will have gained proficiency in patterns learned.

*****

Lessons 73-80 are review lessons to assist in proficiency or to review after a break in instruction. Instructors are free to repeat a lesson or lessons to complete the cycle of 80 lessons. Games may be played additional times to complete lesson cycles.

Phoneme Awareness Game Instructions

Paper Bag Drawing

This game can be modified to play at any level of instruction with as many or few sounds, letters, words, or phoneme manipulations as is appropriate for that lesson.

Modifications may be made to encourage teamwork, and or students working as teachers as is appropriate for each class and specific activity. Modifications can also be made to allow students to move around, for example, putting the bag across the room or using two bags (one to put in used cards) that allows two students to be walking at the same time.

Review of Sound-Letter-Label Associations

Place cards from the playing deck into the bag. Use the sounds, letters, labels, or mouth forms to be reviewed. Have the students draw a card from the bag and provide information about the card they have drawn. The information they provide can vary based on teacher discretion. For example, if the student draws a letter, he may be asked to provide the letter name, its sound or brother, or to identify if it is noisy or quiet. A mouth form picture might require questions for what the label is, or why the mouth form was given that label.

Color Encoding

Write on index cards, syllables that would be appropriate for students to color encode. Use examples from the lists provided in the book. Have the students draw out a card (without looking at the card) and have the instructor or capable student read what is written on the card. The students who drew out cards should color encode what was read.

Phoneme Manipulation

Write on index cards or use the ditto master lists provided in the back of the book, phoneme manipulations that would be appropriate for students. Examples can be obtained from lists provided in the book. Students should draw out a card (without looking at the card). The instructor or capable students should read the first "word" on the card, the original student can change the color encoding based on the manipulated sound, or a different student can provide the manipulation.

Decoding

Write on index cards (or use the ditto master lists provided in the back of the book) words and or syllable combinations that would be appropriate for students to decode. Have students draw a card and read what is on the card.

Fishing

Fishing can be played and modified using the same techniques used for the Paper Bag Drawing, however, for fishing, each card should have a paper clip attached. The student should use a pole (e.g., pencil) with a magnet attached to "catch" a card. (This game takes longer to play, but provides variation).

APPENDIX F

Reading Component-Based Remedial Instruction:

Poor Comprehension Treatment

The treatment designed for readers who had poor comprehension skills was a compilation and sequencing of ten research-based comprehension strategies. Icons or symbols representing each of ten strategies were developed by the researcher to aid the student's internalization and generalization of the strategies. Lessons were designed for 15-minute blocks of time, for 80 instructional lessons, that amounts to a total of 20 hours of instruction. Reading materials were selected by the teacher.

The ten comprehension strategies in the following sequence were used to increase comprehension skill. The following icons ☺, ?, ✂, ☤, ✍, ✓, ☛, = were used to aid in the internalization and generalization of the strategies, and are noted at the end of each strategy reference. Students were taught to associate particular reading strategies to the icons. The icons were faded as the students mastered the strategy use.

1. Activating or building **schema** (Carnine & Kinder, 1985) ☺

The teacher and students built the needed background (schema) for the lesson, through discussion, practical experience, film, video, etc. Important concepts and vocabulary were introduced (previewed) in this manner.

2. **Questioning** story text (Palinscar & Brown, 1988) ☺

Students were asked to pretend that they were teachers and come up with questions that they would ask before and during the reading.

3. Creating an awareness for the **purpose** of reading this material (Schunk & Rice, 1989) ?

Students were asked such questions as "why are we reading this story?", "what do you think you will know after you have read this story?"

4. Becoming aware of story **structure** and **grammar** (Short & Ryan, 1984) ✂

Students were asked questions such as "what is important about this story?", "what am I supposed to learn from this lesson?"

5. Thinking about **scenes** or **activities** (Gambrell & Bales, 1986) ❣

Students were asked to think about the scenes or activities described in the lessons. Some prompting question examples were: "what would the story be like if ... ?, "what would happen if ... ?

6. **Predicting** story events, story outcomes (Palinscar & Brown, 1988) ✍

Students were asked to think about or guess what will happen in the story. For example, ask, "what do you think is going to happen?"

READ *Each student then read the text, either silently or orally to the group.*

READ *During the reading, strategies 7 and 8 are used.*

7. **Monitoring** comprehension (Symons, McGoldrick, Snyder, & Pressley, 1990) ✓

Students were asked to continually ask themselves questions regarding their understanding of what was being read. This included guessing meaning from the text, referring to the dictionary, and seeking the assistance of a peer or teacher.

8. **Clarifying** story text (Palinscar & Brown, 1988) ✓

Students were encouraged to try to guess from the context, if they did not understand the meaning of a word of sentence. If this failed, they were encouraged to ask the teacher or a peer in the reading group.

Examples of questions that students asked themselves for strategies 7 and 8 were: "Do I know what this means?", "do I understand what a ... is?", "who can help me understand what this means?", "where can I get help to understand what this means?"

Students were regrouped or worked individually to complete strategies 9 and 10.

9. Identifying the **main idea** - use of story maps (Idol, 1987) ☛

Students were asked to identify the most important thing/s that they had learned from the text. A prompting question for this strategy was "this story was about ...?"

10. **Summarizing** story text (Palinscar & Brown, 1988) ✒+✒ =

Students were asked to close their reading material after reading, and summarize in one or two sentences in their own words, what they learned (read). A prompting question was "what was the most important thing that I learned from this?"

These strategies were carried out through the structured method of Reciprocal Teaching (RT) (Palinscar, David, & Brown, 1989), in a small group (4-5 students) setting. The RT method is based on the teacher and students exchanging the teaching or group leader role, in a progressive manner. In this particular study, the exchanging of roles was dependent upon first the mastery of the ten comprehension strategies, projected to be at about the 40th lesson (after 10 hours of instruction).

Poor Comprehension Strategy Instruction Lessons Plans

Lessons 1 and 2: Students will observe the teacher (T) modeling the 10 comprehension strategies.

Materials: T chosen reading material

Evaluation: Student (S) will be able to verbalize 2 - 3 of the questions the T asked during the modeling/self-talk.

Lessons 3 and 4: Students will observe T modeling the 10 comprehension strategies, while concurrently seeing the strategy icons.

Materials: Strategy icons

T chosen reading materials

Evaluation: S will be able to verbalize 2-3 of the questions the T asked during the modeling/self-talk.

Lessons 5 and 6: Same as Lesson 3 and 4

Lessons 7 and 8: Students will generate questions (with prompting) that correspond to the strategy icons.

Materials: Strategy icons

T chosen reading materials

Evaluation: Each S will be able to generate (with prompting) at least one question for each strategy icon.

Lessons 9 and 10: Students will generate questions that correspond to the strategy icons (using strategy checklist) using T chosen text

Materials: Strategy checklists

T chosen reading materials

Evaluation: Each S will be able to generate (with prompting) at least one question for each strategy icon using strategy checklists.

Lessons 11 and 12: Students will use the strategy checklists to aid in question generation while reading T chosen text.

Materials: Strategy checklists

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy checklist in relation to text.

Lessons 13 and 14: Students will use the strategy bookmarks to aid in question generation while reading T chosen text.

Materials: Strategy bookmarks

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy bookmarks in relation to text.

Students will be given a strategy bookmark to keep at school.

Students will be given a strategy bookmark to take home.

Lessons 15 and 16: Same as Lessons 13 and 14

In this phase of the instruction, the teacher's role will change from that of a reading strategy instructor to that of a mediator/reflector and coach. Through this interactive process, students will gradually acquire proficiency in strategy use and over time teacher involvement will fade as the teacher relinquishes control of the reading discussion.

Lessons 17 and 18: A student leader will instruct students to use the strategy checklists to aid in question generation while reading T chosen text.

Materials: Strategy checklists

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy checklists in relation to text.

Lessons 19 and 20: A student leader will instruct students to use the strategy checklists to aid in question generation while reading T chosen text.

Materials: Strategy checklists

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy checklists in relation to text.

Lessons 21 and 22: A student leader will instruct students to use the strategy checklist to aid in question generation while reading T chosen text.

Materials: Strategy checklist

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy checklist in relation to text.

Lessons 23 and 24: A student leader will instruct students to use the strategy checklists to aid in question generation while reading T chosen text.

Materials: Strategy checklists

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy checklists in relation to text.

Lessons 25 and 26: A student leader will instruct students to use the strategy checklists to aid in question generation while reading T chosen text.

Materials: Strategy checklists

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy checklists in relation to text.

Lessons 27 and 28: A student leader will instruct students to use the strategy checklists to aid in question generation while reading T chosen text.

Materials: Strategy checklists

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy checklists in relation to text.

Lessons 29 and 30: A student leader will instruct students to use the strategy bookmarks to aid in question generation while reading T chosen text.

Materials: Strategy bookmarks

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy bookmarks in relation to text.

Lessons 31 and 32: A student leader will instruct students to use the strategy bookmarks to aid in question generation while reading T chosen text.

Materials: Strategy bookmarks

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy bookmarks in relation to text.

Lessons 33 and 34: A student leader will instruct students to use the strategy bookmarks to aid in question generation while reading T chosen text.

Materials: Strategy bookmarks

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy bookmarks in relation to text.

Lesson 35 and 36: A student leader will instruct students to use the strategy bookmarks to aid in question generation while reading T chosen text.

Materials: Strategy bookmarks

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy bookmarks in relation to text.

Lessons 37 and 38: A student leader will instruct students to use the strategy bookmarks to aid in question generation while reading T chosen text.

Materials: Strategy bookmarks

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy bookmarks in relation to text.

Lessons 39 and 40: A student leader will instruct students to use the strategy bookmarks to aid in question generation while reading T chosen text.

Materials: Strategy bookmarks

T chosen reading materials

Evaluation: Each S will generate question/s corresponding to icons on strategy bookmarks in relation to text.

Lessons 41 and 42: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 43 and 44: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 45 and 46: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 47 and 48: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 49 and 50: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 51 and 52: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 53 and 54: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 55 and 56: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 57 and 58: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 59 and 60: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 61 and 62: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 63 and 64: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lesson 65 and 66: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 67 and 68: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

Lessons 69 and 70: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

Materials: T chosen reading materials

Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

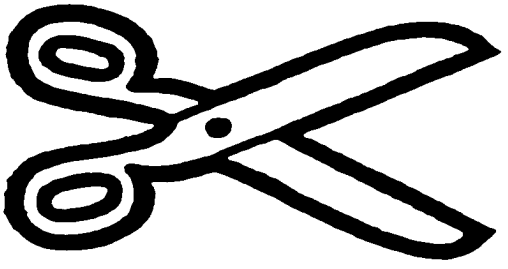
Lessons 71 - 80: Each student will have the opportunity to act as the student leader without the use of the bookmarks.

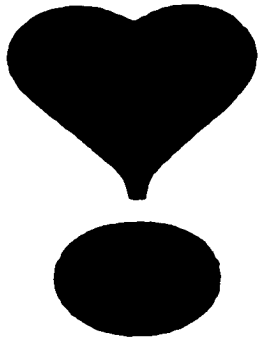
Materials: T chosen reading materials

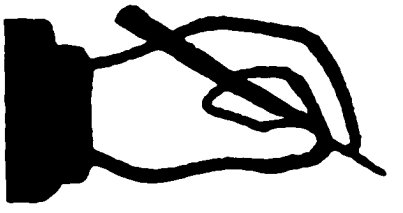
Evaluation: Each S will be able to generate questions/demonstrate all strategies without the use of bookmarks or icons.

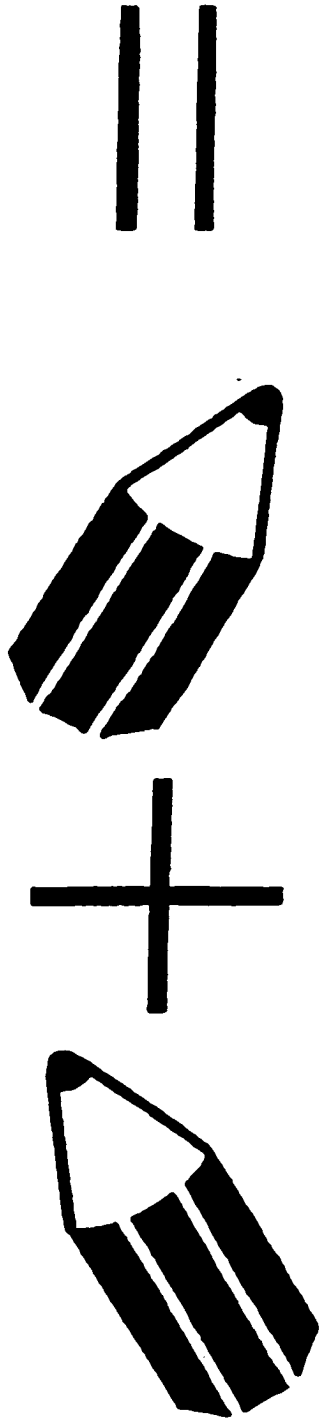
Lessons 71 - 80 can be used also as opportunities to "catch-up" students who may have missed particular lessons.

Comprehension Strategy Icons









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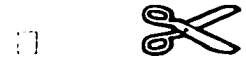

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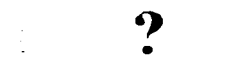

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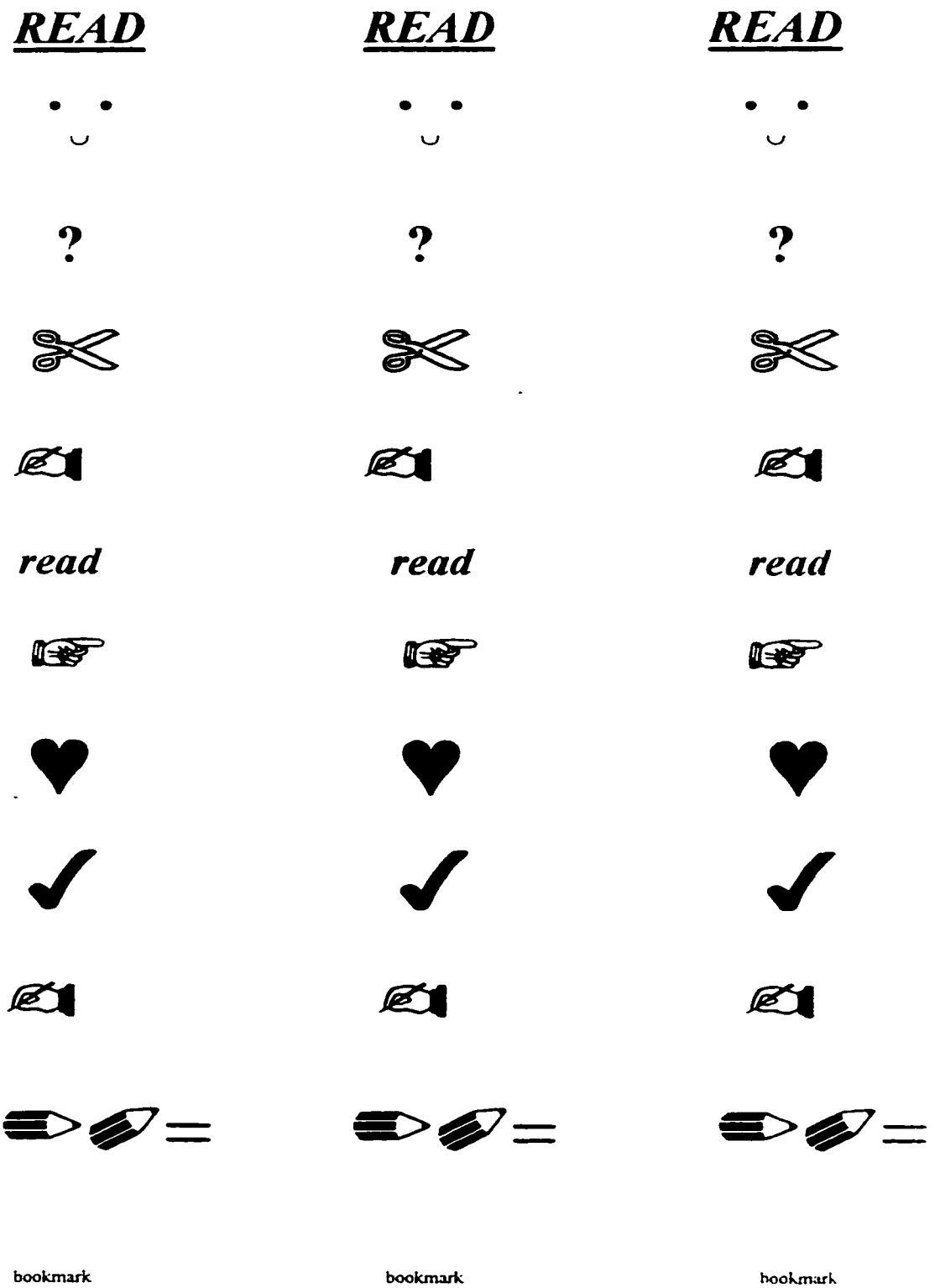

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