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A study to determine the effects of word recognition scores on total grade level scores for adolescents with reading disabilities

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A STUDY TO DETERMINE THE EFFECTS OF WORD RECOGNITION SCORES ON TOTAL GRADE LEVEL SCORES FOR ADOLESCENTS WITH READING DISABILITIES

By
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ABSTRACT

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A Study to Determine if an Increase in Word Recognition Scores Results in Higher Reading Grade Level Scores, 1996
Advisor: Dr. J. Kuder
Special Education

A large majority of classified students have reading problems. Many of these classified students fall behind in reading because their decoding skills are deficient in first and second grades when most children begin to read. This study was an attempt to find out if students who are at least three grade levels behind their same age peers could in reading benefit from a direct instruction flash card procedure to see if an increase in word recognition scores would result in increased scores on total reading scores. The study used a pretest posttest data gathering technique with an experimental versus control group.

The results of this study indicate that direct instruction methods of learning new words may improve the word attack and reading skills of students with disabilities.

MINI-ABSTRACT

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A Study to Determine if an Increase in Word Recognition Scores Results in Higher Reading Grade Level Scores, 1996

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Special Education

The purpose of this study was to determine if classified students who were three grade levels behind in reading could increase their reading grade levels by increasing their word recognition scores using a direct instruction reading method.

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I would like to dedicate this thesis to Alice Elizabeth Bowers as a small way of thanking her for being a wonderful friend and one of the kindest people I have ever known. Without her influence this may not have been written and my life would surely not be as fulfilling as it is.

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CHAPTER 1

STATEMENT OF RESEARCH QUESTION

Reading is a complex process. It is complex to learn and complex to teach. One can get as many different definitions of reading as the number of professionals one asks in the different educational fields. While these definitions may shed some light on the reading process they may be very little help to a teacher with a fourteen year-old student reading on the second grade level. Estimates suggest that 85%-90% of all children classified as learning disabled manifest reading difficulties, the most common of which include word recognition and comprehension problems. (Mercer, 1984).

To 60 million Americans reading is a chore, an embarrassment, even the reason they cannot get or keep a fulfilling job. The term used to describe these people is functionally illiterate. It's a deceptive term because the condition it describes is constantly changing. A factory closes and workers whose modest reading skills were never an issue suddenly find their next jobs will require consumption and production of written information. Overnight they find themselves functionally illiterate.

Teaching reading is still the most important task of the schools. Finding and helping the students who are at risk of failing to learn to read is an urgent priority for all education.

Reading disorders start in the emergent literacy stage of learning to read. Children who do not acquire foundational concepts about print may be doomed to permanent failure. (Gillet, J. W.& Temple, C., Understanding Reading Problems,1994). One study has shown that nearly 90% of the first graders who were behind their peers in reading were still in the bottom group four years later but by then, the distance between them and the average reader was immense.(Juell, 1988).

After the Emergent Literacy Stage comes the Beginning Reading Stage. Children who lack phonological awareness which is an outcome of the emergent literacy stage will have problems decoding words which slows them from building a sight vocabulary and without an adequate sight vocabulary their comprehension will suffer because they will use up so much of their available attention deciding what the words are that they won't have enough of it left to concentrate on meanings.

If children haven't learned to recognize many words by the end of the Beginning Reading Stage or early second grade when they enter the Fluency Stage they will not experience the growth in reading rate and expressiveness associated

with this period. The gap between these children and their classmates will be growing and so will their self-awareness. These children can be beginning to feel like failures and that attitude can compound their problem.

Later stages of the reading process Reading for Pleasure/Reading to Learn and Mature Reading are not as crucial for the special education teacher who has a class of students stuck in the first two stages. Finding age appropriate, interesting materials can help instill a desire to read and learn but a child must be able to decode.

Reviews of traditional remedial reading programs, although they vary within school districts and even within schools (Johnston & Allington, 1991) and reviews of chapter 1 programs generally reach the same conclusion: that these programs have had a "positive but marginal impact" (Fagan & Heid, 1991). Studies of traditional remedial reading programs have found more instruction on isolated skills and fragments of text than on reading connected text. (Rowan & Guthrie, 1989).

Reviews of non-chapter 1 preschool intervention programs (Scott-Jones, 1992, Bryant & Ramey, 1987, & Karweit, 1989) all confirm the long term value of early intervention, including fewer retentions, fewer referrals to special ed., lower drop-out rates and higher likelihood of employment as young adults. First grade intervention programs such as Reading Recovery, Success for All, Early

Intervention in Reading, and First Steps are all showing promise. Some research based reading interventions being used with students with mild disabilities are: Reciprocal Teaching, Microcomputer Applications, Effective Teaching Principles, Peer Tutoring, and Direct Instruction models. These research based models and their relative effectiveness will be addressed in the review of the literature.

The question to be examined in this study is whether increased word recognition can lead to higher grade levels of reading. In the investigation of the problem, an increase in word recognition scores will result in an increase in grade level scores in reading. Word recognition is defined as looking at a word on a flash card or in a basal reader and know the word in five seconds or less. Grade level is defined as the level of reading that their same age peers are reading at according to a respected instrument such as the Woodcock Johnson.

The reason for studying this approach is that it is a simple and direct method of improving a student's reading. For adolescent students who have not clicked with phonics in their formative reading years sounding out words may not be the answer to their reading deficit. Direct Instruction with the school's basal series will be the method of instruction. The primary components of D.I. include teacher signaling, choral responding, guided and independent practice, corrective feedback, and reinforcement

(Becker,1977). Direct Instruction Reading (Carnine,D., Silbert,J., & Kameenui,E., 1990) will be the source reference for D.I. formats for the intervention. If this direct instruction word recognition improvement method is successful, the ramifications could be important. Special education teachers would have another weapon in their arsenal to help poor readers. This is not seen as a panacea but with immediate feedback to a student it can give them a better outlook. It can also put a child's parents or guardian in a position where they can be of help by going over words with their children.

In chapter two pertinent literature on word recognition and the part it plays in reading improvement and successful programs will be reviewed. The literature being reviewed has been divided into studies of normal developmental growth in reading and subjects with reading disabilities to explore the importance of word recognition and acquiring literacy. Chapter three will consist of how the research will be designed. Chapter four will consist of results and chapter five will be a discussion and conclusions.

CHAPTER 2

LITERATURE REVIEW

The article "Decoding Skills and the Remedial Reading" (Fowler, 1988) served as an introduction to the problem addressed by this study of helping students who are reading far below their grade level. Dr. Fowler feels that the old "sink or swim" philosophy in other words is unacceptable in today's modern technological society and that the primary task of elementary and primary teachers is to identify poorer readers and find a way to help them with their decoding skills.

The author describes the knowledge we have obtained from previous studies of how children learn to read by combining sounds and letters or phonemic-graphonic association commonly known as phonic decoding. Fowler states, "Through these studies we have accepted the fact that phonic decoding is a necessary first step in teaching youngsters to read" page 2. Fowler cuts through the methods war of phonics vs. see and say or sight word method and outlines the progress of the steps a "normal" child goes

through while learning to read in the first and second grade.

Students are shown the familiar patterns that make up simple words using selected regular vowels, vowel combinations, and the simplest consonant forms. By comparing the appearance of words such as hat, cat, rat, and mat with the "heard" version, the students make the connection that allows them to read these words. After making these connections hopefully the students progress to the less obvious and more complicated letter combinations while still working with regular and familiar forms. After these forms the less regular forms are introduced--word pairs such as "have" and "save". The student is asked to understand that much of her reading vocabulary will need to be visually memorized not sounded out. Through practice the student comes to realize that all reading is a visual process and his dependence on phonic cues drops away.

The author makes the case that this is the way reading is supposed to happen for all students, but doesn't. During the first couple of years of school when the decoding of words is being learned, some students do not learn to decode or sound out words. For readers who do not gain these basic or low-level skills in the primary grades this is just the beginning of reading failures. Most primary and elementary school teachers have a whole class to contend with and unless a reading specialist is available to help identify

and remediate this decoding problem it may be until junior high that they are identified.

For students who have not gained the basic decoding skills, the author believes that they should not be allowed to fall through the cracks. He sees promise in computer-aided instruction and peer tutoring.

I was dismayed at the lack of sources in this article but was impressed by the cogent plea for excellence for our children and the basic way the beginning processes were explained.

As was stated in the introduction of this thesis, reading is a complex process, complex to define and complex to teach. Different authorities can have different definitions of what reading is and the individual importance of its different components. In "Decoding, Reading, and Reading Disability" by Philip B. Gough and William E. Tunmer (1986), the authors attempt to clarify the role of decoding in reading and reading disability. The authors do this by using a simple view of reading that R = D X C, where R = reading, D = decoding, and C = comprehension. In support of the hypothesis of this thesis the authors feel that the sounding out of words using the phonetic method of letter and sound correspondence is a "primitive" form of decoding. They feel that the skilled decoder is the one who can read words in isolation quickly and accurately. But they concede that word recognition is dependent on knowledge of letter-

sound correspondence rules.

In the simplified model of reading R = the product of D X C comprehension is defined not as reading comprehension but linguistic comprehension, the process by which word information and sentences are interpreted. Decoding is not sufficient itself for reading but it is necessary for reading because print to be processed into language it must be understood.

The article points out the implications of the simple model of reading are more interesting for reading disability than reading ability. Following the simple model of reading, reading disability can result from an inability to decode, comprehend, or both.

This short article was valuable because it took some complicated problems and simplified them. The authors from the beginning did not set out to settle any of the debates pertaining to the issue of reading they only wanted to simplify the issues. The studies they cited were well known to this researcher and their concluding statement of "The simple view presumes that once the printed matter is decoded, the reader applies to the text exactly the same mechanisms she/he would bring to bear on its spoken equivalent. This is clearly a claim that can be tested empirically: It would be falsified if anyone would show us someone who could decode and listen, yet could not read." is a simple, functional definition of reading.

Developmental

In their 1975 study Charles A. Perfetti and Thomas Hogaboam took two groups of students who differed in skill levels in reading comprehension and investigated the question of independence and interdependence of two of the components of reading, decoding and comprehension. The subjects were 64 students from a Pittsburgh parochial school in a predominantly white working class neighborhood. Thirty-two third grade and thirty-two fifth grade students broken into two skilled and less skilled reading comprehension groups. One of each group in each grade that were assigned to either comprehension group on the basis of scores on the reading subtest of the Metropolitan Achievement Test. For each grade 40 experimental words were selected along with 18 practice words. These experimental words were classified as high frequency, low frequency, and pseudowords in order to allow direct comparisons on words that every child knew and on words that were not known by any given child.

The task for each reader was to observe a printed word projected on a screen in isolation and to say the word as quickly as possible. So both decoding and production were part of the task. Decoding refers to word recognition in some cases and code breaking in other cases. Response time was referred to as vocalization latencies and overall, vocalization latencies were shorter for the skilled group

than the less skilled group.

The direction of the differences between the two groups seem to suggest that for skilled comprehenders there are only small differences between known and unknown words. Less skilled comprehenders, on the other hand, had much slower vocalization latencies for unknown words than for known words. A sign test for skilled and unskilled comprehenders in the third grade revealed significant differences between known and unknown words for the less skilled group ($p < .01$) but not for the skilled group ($p = .77$). There were no significant differences for the fifth grade. Further, the superiority of the skilled reader is greater for pseudowords and low frequency words than for highly familiar words. The authors conclude that, "good readers appeared to be more able to use letter redundancy in words than poor readers. Thus it may be that the major decoding differences among readers are in the automated utilization of redundant letter sequences as decoding units.

In this regard, it is tempting to suggest that less skilled readers engage two different processes in decoding. The first is a word recognition process. If the word is recognized on some grounds, such as its being an overlearned letter sequence such as <u>the</u>, it is coded appropriately. If immediate recognition fails, as it does with less familiar words, true code breaking is engaged. It is here that good readers and poor readers are different. The good reader

does this quickly and automatically on the basis of well-learned skills that take advantage of letter and sound redundancies while the poor reader does this with some effort and not automatically.

Walsh and Gillingham (1988) claim that letter naming involves processes which, if slow, can block the transitions through which beginning readers pass through are tested. A positive relation between young children's accuracy of letter naming and later reading achievement has been found before (Gates,1940; Gibson and Levin, 1975 p. 250; Wilson & Flemming, 1940). Of the six subtests of the Metropolitan Readiness Test, the alphabet subtest has consistently been the best predictor of scholastic achievement (Hildreth, Griffiths and McGauvran, 1969, p.23). Some of theories why letter-name knowledge affects achievement are: Ability to label something facilitates storing information about it in long term memory (Gibson,1969; Murray & Lee,1977). Letter names give children nameable referents with which to associate phonemes which can be considered the first step in learning to decode (Ehri, 1983,1984). Although skilled readers do not need letter names it does not diminish their helpfulness to the beginning reader (Lesgold & Curtis, 1981).

Fifty-one kindergarten and 60 second- grade children at two schools in Beloit, Wisconsin were tested for letter naming accuracy and were tested 12 months later for reading

progress. Equal numbers of blacks and whites and girls and boys were subjects. A strong positive correlation between letter-naming speed and reading achievement in two different kindergartens of (r=.89 and r=.80). The positive correlation between letter-naming speed and reading achievement that was found among kindergarten children was not found among the second grade children. With the second grade children the association was negative but nonsignificantly so.

The study concludes that its findings are consistent with both original hypotheses that attention be paid to the importance of the facility in letter naming and that it is important to remember there is a sunset clause--a point at which the importance of further improvement in letter naming facilities is nullified.

Carnine (1977) follows Jeffrey and Samuels (1967) who extended the research of Silberman (1964) and Bishop (1964) who were comparing the phonic approach to the look-say method in beginning reading instruction. Jeffrey and Samuels reported higher transfer of skills to new tasks with the "sounds" approach. Mr. Carnine's study addresses two concerns raised by Jeffrey and Samuels about the generalizability of their findings. To remedy this Carnine in his study first measured transfer from sounds and word training to irregular as well as regular words and second addressed the issue of instructional time by altering their

teaching procedures so more closely approximated classroom teaching procedures.

Twenty-six four and five year olds who were not engaged in any formal reading program were randomly selected from a group of eighty-two pre-schoolers. After the experiment was completed half of the children were given the Slosson Intelligence Test. The average time required for a child in the sounds group to read all eighteen words correctly was 116.5 minutes while the average for the word group was 132.4 minutes. The mean I.Q. for the sounds group was 120.9 and for the word group 130.8. The author feels the findings strengthen Jeffrey and Samuels' generalization that early sounds teaching would produce more transfer to regular words in the classroom than would early word teaching. Also that the present findings indicate that transfer effects to irregular words are greater for a sounds approach than a word approach.

Maria A. Ceprano (1982) compared the efficiency of the phonic method which emphasizes the phonic features of a word alone as opposed to methods that emphasize meaning through oral, written and pictorial cues. She conducted a study that examined the performance of 158 kindergarten children on two different modes of assessment, a sentence mode test paralleling aspects of the context treatment and an isolation mode test paralleling aspects of the word alone treatment. The subjects were taught five words a day for

eight days by a context or word alone method. Word learning efficiency was assessed after the last instructional session and then again two weeks after instruction.

While the Word Alone (using graphic and/or phonic features) method group recognized more words on both tests the results of the study suggested that isolation mode tests result in performance scores biased in favor of children taught by word alone methods. Both groups self-corrected a very small portion of their errors but the context group showed more of a tendency to realize an error had been made. The subjects in both groups had a tendency to substitute words in the sentences from words on the target lists and in spite of this inclination the context method group more often attempted to integrate the syntactic and semantic cues with the graphophonic cues of the words within them.

Ehri and Roberts (1979) compared the effects of two type of word-learning experiences. Beginning readers were taught to read words which were printed either in meaningful sentence contexts or singly on flash cards. The subjects were children with a mean age of 7.1 with 22 females and 15 males were taken from the first grade of a middle class elementary school. They had undergone 7-8 months of beginning reading instruction with those who had progressed too far or not enough dropped from the study. Subjects retained were those reading in either the second or final books at the first grade level. Teachers were asked to form

matched pairs of subjects based on reading ability. Members of each pair were assigned randomly, one to the isolation group, one to the context group.

As expected the context-trained children learned more about semantic features of printed words, whereas flash card-trained children could read words faster and learned more about orthographic forms.

Don McCabe (1982) feels that reading should be taught from the beginning to all students with the techniques and materials and orders of presentation that have been found to be effective in remediation such as Orton-Gillingham or Slingerland methods. McCabe feels it is "common sense" to teach words in such lists in phonic context, rather than the phonic isolation common to many commercially available word lists although he gives no examples. McCabe believes that the standard Language Experience Approach (LEA), can be modified to teach students systematically words in both phonic and sentence context. To put controlled lists into effective use keep the number of new irregular or sight words to a minimum, give maximum exposure to "known" words, introduce word families one at a time, and gradually introduce sight words from grades 1-12. The author feels that it is the least frequently used word families or phonic principles that need the most drilling and that frequency of appearance is a starting place to pick the sight words and word families to teach and to determine in what order.

This was not a study but I feel the author has some excellent points because the Benchmark school in Media, PA has had success with a variation of these methods.

Disabilities

In "Information Processing Abilities and Reading" S. Jay Samuels (1987) takes the LaBerge and Samuels (1974) information processing model as a framework to explain some basic reading problems. If a student has a physiological cause of a reading disorder it would be likened to a hardware problem. In this work the author leans toward the cause being a software problem or a failure of the student not learning the skills or strategies necessary to read. The Laberge and Samuels model contains four components: The first is attention, the second is visual memory, the third is phonological memory, and the fourth is semantic memory. Attention is the effort or energy required to perform cognitive tasks. Poor readers use so much attention on decoding that there is not enough available to construct a meaning hence poor decoding poor comprehension. When decoding takes too much attention this is called lack of automaticity. Mr. Samuels gives the classroom teacher several procedures to check for automaticity.

The visual memory processing stage is primarily responsible for the reader's ability to take print from the page and select an appropriately sized print unit for word recognition. A beginning or poor reader may choose a letter

where a skilled reader may choose a word.

Phonological memory represents the sound units that map on to the visual units. The size of the units in phonological memory vary in size from phonemes to morphemes.

Semantic memory is the place where declarative and procedural knowledge is stored along with lexical information about words and word meanings.

Citing Samuels and Miller (1985) study of L.D. and normal kids attention was not necessarily the cause of low academic achievement. The author concludes by citing Perfetti (1985) and feels reading disability could be a speed of decoding and processing deficit.

Wolf, Bally, and Morris attempt to fill in some gaps in our knowledge about the differences in the kinds of reading and naming measures at different developmental stages and the naming speed-reading relationship. They studied the reading/retrieval relationships in a group of 83 children across the 3 year period before, during, and after reading acquisition. The subjects were 72 average and 11 severely impaired readers in the kindergarten to grade 2 period and were tested for three consecutive years from kindergarten to second grade. Four continuous naming tests were used including three of the original Rapid Automatized Naming Tests for color, letters, and numbers. For purposes of this paper we will address the results of the impaired children.

From kindergarten on, impaired readers have a different developmental pattern. First, they are significantly slower than average readers across all tasks across all years. Second, there is no early predifferentiation period where name-access speed for all symbols is similar. From the beginning graphological symbols are slower than nongraphological symbols, with letter-naming speed slowest. This means that impaired readers begin with both a general naming deficit and a particular deficit for graphological symbols.

Three phases make up the development of word reading skill: accuracy, automaticity, and speed this conceptualization by the authors is based on the theory of automatic information processing proposed by Laberge and Samuels (1974). The last phase is reached when components of the identification process (i.e., graphic, phonological, and semantic) are combined in the memory for particular words. Ehri and Wilce (1983) explored the third component in two experiments. In experiment 1, skilled and less skilled readers in first, second, and fourth grades identified familiar printed words, consonant-vowel-consonant (CVC) nonwords, digits and pictures. In experiment 2 younger less skilled readers practiced reading familiar words and CVC's.

In experiment 1 the subjects were first, second and fourth graders with eight skilled and eight less skilled

readers at each grade level. In experiment 2 there were 18 first graders and 19 second graders involved with a reading teacher making the skill level recommendations and teacher and testing determining skill levels in experiment 1.

The results of experiment 1 were that skilled readers in all grades identified words as quickly as digits but by less skilled readers in only fourth grade. Unitized speed, which is identifying words as quickly as digits, with CVC's occurred in second and fourth graders among the skilled readers, but not among less skilled readers at any level. In experiment 2 younger, less skilled readers practiced reading familiar words and CVC's. Practice boosted reaction times to CVC's but not to words read accurately before training, and reaction times to both remained slower than digit reaction times, indicating that practice promotes the development of unitized speeds very slowly in less skilled readers.

Marston, Deno, Kim, Diment,and Rodgers (1995) field tested six research based reading teaching strategies on students with mild disabilities. The study involved 37 special educators and 176 students. The research was conducted in the School-Based Resource Program of the Minneapolis, Minnesota, Public Schools and focused on instruction designed to attain annual goals in reading because about 90% of the students with mild disabilities in this program received direct special education service in

reading.

The intervention strategies included peer tutoring, reciprocal teaching, effective teaching principles, computer-aided instruction and two direct instruction models, SRA, 1988, and direct instruction with Holt basal. The question posed in this study was whether the instructional interventions recommended in the research literature actually lead to better achievement on the part of students with mild disabilities than the instruction ordinarily provided by their teachers. The conclusion was maybe. Students' average achievement gains were greater for only two of the six strategies--computer assisted model and the Holt direct instruction model.

The mastery learning model states that most children can achieve a high degree of learning if two conditions are met. First, each learner must be given enough time to master every learning step in an instructional sequence. Second, children must be given appropriate remedial help whenever a step is not mastered. Bryant, R. Fayne, and Gettinger evaluated the effect of applying the mastery model to sight word instruction for learning disabled elementary school children. Forty-eight LD children were taught 30 sight words in 9 lessons which used mastery learning strategies, and a comparison group of 16 with methods that are typically used in the teaching of sight words. While all children could read less than 10% of the words on the

pretest, the experimental group achieved 90% accuracy on the posttest. This was higher than the average posttest performance of the comparison group of 72%.

The results of this study suggest that a majority of LD children can reach mastery on sight words within a reasonable time if sound remedial principles are consistently applied.

Joann Sainz and Catherine Biggins, (1988) presented the story of Tulsa, a 14 year old girl from New York City whose mother had died and grandmother referred her to the Department of Social Services of the City of New York because she was disobedient, hyperactive, and out of control. She made a good adjustment to the group home she was placed in. She was given the WISC-R that revealed global intellectual ability in the upper limits of the mentally deficient range with significant verbal deficits and relatively better (borderline) non-verbal ability. Her visual motor organization was not good, suggesting a possibility of minimal brain dysfunction.

For this potential drop-out, who had difficulty comprehending what she had read because she could not recognize a word, even though she often knew its meaning, a methodology for teaching word decoding provided an effective strategy for achieving gains. Lessons for the eighth-grade girl followed this methodology: (1) decoding the unfamiliar word, based on syllabication; (2) recognizing syllables in

words in print; (3) recognizing syllables in words by counting vowels; (4) practicing blending single consonants with the vowel stem; (5) learning basic pronunciation rules; (6) recognizing the individual consonant in its sound-symbol relationship; (7) listening to consonants and vowel sounds; and (8) exercising higher order skills such as literal interpretation, creative comprehension, and inference concomitantly with the sound-symbol relations. After tutoring, the Stanford Diagnostic Reading Test, Blue Level was administered in two sessions.

Results showed large discrepancies between reading comprehension (7.5) and word meaning (5.2), but the greatest improvement that she made in five months was significant, The gains in word decoding contributed to improved performance in reading and was a major treatment component for the girl's emotional, attitudinal and behavioral problems that were blocking effective instruction.

Gaskins, Downer, Anderson, Cunningham, Gaskins, Schommer, reported on a methodology developed at the Benchmark school to help poor readers deal with the roadblock that poor decoding skills set up for the task of constructing meaning from text. In most cases more phonics instruction, similar to what has not worked in the past does not improve this situation. Based on an analysis of the research literature in decoding and linguistics and a 4 year cycle of program development, a new program was created for

teaching decoding to poor readers of average or above intelligence in grades 1-8.

The program guides students to become aware of patterns and consistencies in our language and to apply a decoding process of using what they have learned about words to decode words they do not know. It is a teacher directed, supplemental program to be taught to a whole class for approximately 15-20 minutes a day and is intended to be used with a basal or trade book program. The program features a multisensory approach,strong emphasis on vocabulary and language development, and a direct teaching model. Goals of the program include teaching students to use known words to decode unknown words, to discriminate structural components of words, to see how our language is organized, to be flexible in pronouncing words, and to demonstrate automaticity in decoding.

On a typical Monday five new key words, written on five pieces of colored construction paper, are attached to the chalkboard by magnets. At the end of the week these five words will join other words placed in alphabetical order on the wall above the chalkboard. By the end of the school year 120 key words, containing both the major vowel spelling patterns and common initial letter sounds found in our language, are displayed on the wall. From here the teacher puts a sentence on the board using one of the five words and discusses what they have learned about figuring out unknown

words. These are steps that are used with elementary students who do not possess a large sight word vocabulary. The intermediate level of the program was designed for intermediate-grade poor readers with a basic sight vocabulary that allows them to read independently at the mid-second grade level or higher and who possess some phonological awareness. Emphasis at the intermediate level is on automatizing the use of the compare/contrast strategy.

Two tests of decoding competence were administered each spring since 1985. One test contains regular pseudowords that are pronounceable and close to English words. The other test contains "transfer words" words that are not included in the program. After analysis Benchmark students showed a statistically significant increase on the pseudoword test and nearly significant increase on the transfer word test.

Hargis, Terhaar-Yonkers, Williams, and Reed examined how many repetitions of words mildly handicapped students needed before they could recognize them on a word recognition test. More specific purposes were to determine: (1) how the words' decodability and imagery level affected the repetition requirements and (2) any difference in effect that the presentation of words in context or in isolation might have on repetition requirements of these words since teaching practices use context and words in isolation.

Of the 17 students in this study 15 were classified as

learning disabled and 2 as mildly retarded according standards of the Tennessee Dept. of Ed. The students were being served in a special education resource program for varying amounts of time each day. All had a discrepancy between reading achievement and expected ability of greater than one standard deviation. Their ages were 8.7-13.9 years with a mean of 11.2. Their reading grade levels ranged from 1.5-3.0 as determined by the Peabody Individual Achievement Test.

Sixteen words were chosen for the study all of them unfamiliar. There were 4 words in each of the 4 categories: high and low imagery and decodable and nondecodable. The mean number of repetitions required for these students to recognize the 16 words was 50. The range of mean repetitions required for the individual students for all 16 words was 35-76. Words presented in isolation require significantly more repetition ($p < .0001$). The mean number of repetitions for the 8 words presented in isolation was 53 while the mean for words presented in context was 46. The imagery level of words also had a significant effect. Low imagery words required more repetition than high imagery words ($p < .0001$). The mean number of repetitions for low imagery words was 52 and for high imagery words 47.

CONCLUSIONS

Stanovich, (1986) presented an extremely exhaustive and intellectual review of the reading literature.

Stanovich uses the Book of Mathew from the Bible to illustrate a rich get richer--the poor get poorer conundrum for beginning readers. Beginning readers who are phonologically aware in the formative reading years learn their decoding skills and never look back while beginning readers who have difficulty with phoneme-grapheme correspondences may never catch up to their peers and their decoding problems can follow them for years. This was reinforced throughout the literature reviewed as the main reason for successful as opposed to unsuccessful readers.

The "battle" between the phonic method of teaching beginning reading as opposed to the sight word in isolation method has been going on since the nineteenth century with believers in both camps. Studies have validated both methods but for students who are being served in special education the majority of them have reading problems that start with decoding problems. Regardless of what method was used with these students it didn't work for most of them but there are alternatives. Computer-aided instruction, reciprocal teaching, a direct instruction method with a basal, and a methodology that uses what a student knows to decode what they don't know whether it be word families or syllables.

CHAPTER 3

METHODOLOGY

Subjects

The subjects were six classified students from a private school that serves only classified students. To be included in the study each student had to be at least three grade levels behind his age appropriate peers in word recognition and total reading grade level. The six students consisted of four boys: two Afro-American, one Caucasian and one Hispanic and two girls: an Afro- American and a Hispanic. Five of the students were classified as MH, multiply handicapped, and one was classified ED, emotionally disturbed. The range of ages was 12 years 6 months to 15 years 9 months with a mean of 14 years 2 months.

Word recognition scores ranged from 1.0 grade level to 3.2 grade level with a mean of 2.5 grade level. Total reading scores ranged from 2.0 grade level to 3.5 grade level with a mean of 2.7 grade level.

Design

The design is an experimental group vs. control group, within-subjects approach where the variation needed for

studying the relationships involved in the study is obtained from changes in the same subjects over time or situations. A pre-test post-test method was used in gathering data and results. The independent variables of the study were word type and reader group. Pre- and post- testing was done by the school director. The intervention procedures will be carried out by the author during classroom reading time.

The instrument used to collect word recognition was the Wide Range Achievement Test 3 (WRAT3). The WRAT's three subtest measure reading, spelling, and arithmetic for students aged 5-74. WRAT's developers claim content and construct validity with the content validity based on the Rasch statistic of item separator. Reliability is claimed from three measures of internal consistency from (coefficient alpha, alternate form, and person separation) and a test-re-test study. "The WRAT suffers from a lack of statistical evidence but is in its seventh edition. It fills a perceived need for a quick and accurate diagnostic instrument" (Buros Mental Measurement Yearbook 12th edition).

The instrument used to collect pre and post test data on comprehension and reading grade level was the Peabody Individual Achievement Test-Revised (PIAT-R) an individually administered achievement battery that provides norm referenced measures from kindergarten-grade 12 in reading, spelling, math and general information. Four statistical

methods were used to estimate reliability: a. split-half, b. Kuder-Richardson, c. test-retest d. item response theory using the Rasch model. The reliability coefficient was very high at .94 or above. The measure has content validity and a construct validity coefficient of .46 - .97.

Procedure

Following re-testing to get current scores and levels in word recognition, comprehension and total reading, (a combination of word recognition and comprehension), each student continued regular reading in their basal readers. Each missed word or error was recorded on paper by teacher. These errors were transferred to 3 x 5 flash cards for the experimental group. At the next individual reading session the teacher took ten flash cards of missed words read each one to the student then shuffled the cards and show them one by one to the student. If the student named the word in three seconds a plus was marked on the back of the card. After three pluses that card was retired but may be reviewed later if instructor wishes. When the student missed the word the instructor told the student the word and had them repeat the word. All subjects cards were kept separate. The control group had their errors recorded but attempted to learn the missed words through the traditional methods of writing a sentence using the missed word or looked up the word in a dictionary and wrote a definition of the word.

At the end of study post-testing for word recognition,

comprehension and total reading levels will be administered.

Table: Subjects

Classification	WRAT-3 Written Decoding	P.I.A.T.-R Reading Recognition	P.I.A.T.-R Comprehension	P.I.A.T.-R Total Reading
1. M.H. (L.G.)	3.4	2.2	1.6	1.8
2. E.D. (S.G.)	3.1	2.6	3.0	2.7
3. M.H. (R.P.)	1.0	1.1	1.2	1.1
4. M.H. (T.W.)	2.8	2.4	3.6	2.9
5. M.H. (J.E.)	1.9	1.9	2.1	2.0
6. M.H. (J.M.)	3.1	2.5	3.3	2.0

Students 1, 2, and 3 were randomly picked to comprise the control group who were to use traditional methods of instruction to recognize missed reading words either writing a definition or a sentence for the missed word.

Students 4, 5, and 6 were randomly chosen to comprise the experimental group which used a direct instruction flash card method to recognize missed reading words.

CHAPTER 4

RESULTS

Experimental Group

Prior to the intervention the three students in the experimental group were pretested on the WRAT-3 for written decoding and on the P.I.A.T.-R for written decoding, comprehension, and total reading. The results of the pretest on the WRAT-3 written decoding test for the experimental group were T.W.-2.8, J.E.-1.9, and J.M.-3.1. This resulted in a range of 1.9 - 3.1 with a mean of 2.6. The results of the pretest experimental group on the P.I.A.T.-R for reading recognition were T.W.-2.4, J.E.-1.9, and J.M.-2-5. This resulted in a range of 1.9 - 2.5 with a mean of 2.2. On the P.I.A.T.-R for comprehension the experimental group's scores were T>W.-3.6, J.E.-2.1, and J.M.-3.3, with a range of 2.1 - 3.6 and a mean of 3.0. On the P.I.A.T.-R pretest for total reading the experimental group's scores were T.W.-2.9, J.E.-2.0, and J.M.-2.0 with a range of 2.0 - 2.9 and a mean of 2.5.

The results of posttest for the experimental group on the WRAT-3 for written decoding were T.W.-2.9, J.E.-2.0, and

J.M.-3.2 with a range of 2.0 - 3.2 and a mean of 2.7. The results of the posttest for the experimental group on the P.I.A.T.-R reading recognition were T.W.-2.4, J.E.-2.1, and J.M.-2.7 with a range of 2.1 - 2.7 and a mean of 2.4. The results of the posttest for the experimental group on the P.I.A.T.-R comprehension were T.W.-3.8, J.E.-2.2, and J.M.-3.3 with a range of 2.2 - 3.8 and a mean of 3.1. The results of the posttest for the experimental group on the P.I.A.T.-R for total reading were T.W.-3.1, J.E.-2.0, and J.M.-2.0 with a range if 2.1 - 3.1 and a mean of 2.5.
A comparison of the pretest to posttest results for the experimental group on the WRAT-3 showed an increase of one month for all three students. On the P.I.A.T.-R reading recognition T.W. stayed the same while J.E. and J.M. increased two months.On the P.I.A.T.-R comprehension T.W. increased two months, J.E. went up one month and J.M. remained constant at 3.3. On the total reading scores for the P.I.A.T.-R T.W. increased two months, J.E. increased one month, and J.M. remained constant at 2.0.

See Table 1 of Results

Results 1

The results of the pretest for the experimental group whose members were selected randomly and consisted of T.W., J.E., and J.M. were as follows:

WRAT–3 Written Decoding	T.W. 2.8	J.E. 1.9	J.M. 3.1	A range 1.9 – 3.1 mean of 2.6
P.I.A.T.–R Reading Recognition	T.W. 2.4	J.E. 1.9	J.M. 2.5	A range 1.9 – 2.5 mean of 2.2
P.I.A.T.–R Comprehension	T.W. 3.6	J.E. 2.1	J.M. 3.3	A range 2.1 – 3.6 mean of 3.0
P.I.A.T.–R Total Reading	T.W. 2.9	J.E. 2.0	J.M. 2.0	A range 2.0 – 2.9 mean of 2.5

The results of the posttest for the experimental group were as follows:

WRAT–3 Written Decoding	T.W. 2.9	J.E. 2.0	J.M. 3.2	A range 2.0 – 3.2 mean of 2.7
P.I.A.T.–R Reading Recognition	T.W. 2.4	J.E. 2.1	J.M. 2.7	A range 2.1 – 2.7 mean of 2.4
P.I.A.T.–R Comprehension	T.W. 3.8	J.E. 2.2	J.M. 3.3	A range 2.2 – 3.8 mean of 3.1
P.I.A.T.–R Total Reading	T.W. 3.1	J.E. 2.1	J.M. 2.0	A range 2.1 – 3.1 mean of 2.7

Control Group

Prior to the intervention the three students in the control group were pretested on the WRAT-3 for written decoding and on the P.I.A.T. for reading recognition, comprehension, and total reading. The results of the pretest on the WRAT-3 written decoding test for the control group were L.G.-3.4, S.G.-3.1, and R.P.-1.0 for a range of 1.0 - 3.4 with a mean of 2.5. The results of the pretest on the P.I.A.T.-R reading recognition test for the control group were L.G.-2.2, S.G.-2.6, and R.P.-1.1 for a range of 1.1 - 2.6 with a mean of 1.9. The results of the pretest on P.I.A.T.-R comprehension test for the control group were L.G.-1.6, S.G.-3.0, and R.P.-1.2 for a range of 1.2 - 3.0 and a mean of 1.9. The results of the pretest on the P.I.A.T.-R total reading for the control group were L.G.-1.8, S.G.-2.7, and R.P.-1.1 for a range of 1.1 - 2.7 with a mean of 1.8.

The results of the posttest on the WRAT-3 written decoding test for the control group were L.G.-3.6, S.G.-3.1, and R.P.-1.1 for a range of 1.1 - 3.6 and a mean of 2.9. The results of the posttest on the P.I.A.T.-R reading recognition for the control group were L.G.-2.3, S.G.-2.7, and R.P.-1.1 for a range of 1.1 -2.7 with a mean of 2.0. The results of the posttest on the P.I.A.T.-R comprehension for the control group were L.G.-1.6, S.G.-3.1, and R.P.-1.2 for a range of 1.2 - 3.1 with a mean of 1.9. The results of

the posttest on the P.I.A.T.-R total reading for the control group were L.G.-1.8, S.G.-2.9, and R.P.-1.2. A comparison of the pretest to posttest results of the control group for the WRAT-3 showed a two month gain for L.G. and a one month gain for R.P., while S.G. stayed constant at 3.1. On the P.I.A.T.-R reading recognition L.G. and S.G. advanced one month while R.P. stayed constant. On the P.I.A.T.-R for comprehension S.G. made the only gain and that was one month. On the P.I.A.T.-R total reading score L.G. remained constant at 1.8, S.G. gained two months, while R.P. gained one month.

See Table 2 of Results

Results 2

The results of the pretest for the control group whose members were selected randomly and consisted of L.G., S.G., and R.P. were as follows:

	L.G.	S.G.	R.P.	
WRAT–3 Written Decoding	3.4	3.1	1.0	A range 1.0 – 3.4 mean of 2.5
P.I.A.T.–R Reading Recognition	2.2	2.6	1.1	A range 1.1 – 2.6 mean of 1.9
P.I.A.T.–R Comprehension	1.6	3.0	1.2	A range 1.2 – 3.0 mean of 1.9
P.I.A.T.–R Total Reading	1.8	2.7	1.1	A range 1.1 – 2.7 mean of 1.8

The results of the posttest for the control group were as follows:

	L.G.	S.G.	R.P.	
WRAT–3 Written Decoding	3.6	3.1	1.1	A range 1.1 – 3.6 mean of 2.9
P.I.A.T.–R Reading Recognition	2.3	2.7	1.1	A range 1.1 – 2.7 mean of 2.0
P.I.A.T.–R Comprehension	1.6	3.1	1.2	A range 1.2 – 3.1 mean of 1.9
P.I.A.T.–R Total Reading	1.8	2.9	1.2	A range 1.2 – 2.9 mean of 1.8

Group Results

Both the WRAT-3 and the P.I.A.T.-R pretest and posttest scores were analyzed by using the statview program using an analysis of variance procedure. The analysis indicated there were no significant differences.

The results of the analysis of the WRAT-3 pretest and posttest was that the Control Group increased by 1 month where the Experimental Group went up 1.7 months.

The results of the P.I.A.T.-R reading recognition pretest and posttest was that the Control Group increased by .7 month and the Experimental Group went up 2 months.

The results of the analysis of the P.I.A.T.-R comprehension pretest and posttest was that the Control Group went up .3 month where as the Experimental Group went up 1 month.

The results of the P.I.A.T.-R total reading test analysis for the posttest and pretest was that the Control Group went up 1 month where the Experimental Group went up 3 months.

See Table 3 of Results

Results 3

The pretest and posttest results were statistically analyzed by the Apple Computer program for statistical analysis at the Special Education department of Rowan

WRAT—3 Written Decoding	Control Group Experimental Group	+ 1 month + 1.7 months
P.I.A.T.—R Reading Recognition	Control Group Experimental Group	+ .7 month + 2 months
P.I.A.T.—R Comprehension	Control Group Experimental Group	+ .3 month + 1 month
P.I.A.T.—R Total Reading	Control Group Experimental Group	+ 1 month + 3 months

CHAPTER 5

DISCUSSION OF RESULTS

In this study I examined the question of how to improve the word recognition of classified children with mild to moderate learning disabilities. To qualify for the study, the subjects had to be at least three grade levels behind their same age peers. My hypothesis was that increased word recognition scores would lead to increased grade level scores in reading. The study was conducted with an experimental and control group. The experimental group used a direct instruction flash card procedure to learn unknown reading words where the control group used traditional methods of writing sentences and looking up definitions.

The study resulted in the experimental group making .7 - 2 month increases over the control group. However, the results were inconclusive because the analysis of the results determined the increases were statistically insignificant. Overall the students made some progress.

Basically 90% of classified students have one type of reading disability or another, Marston, Deno, Kim, Diment, and Rodgers, (1995). Either "hardware" or neurological

deficit or "software" or strategy or lack of strategy problem with reading, S. J. Samuels, (1987). Students who do not learn to decode or associate letters and sounds fall behind their peers after the first and second and many of them are doomed to be less skilled readers all their lives, K. Stanovich, (1986).

The purpose of this study was to see if students who were far behind in reading could benefit from a direct instruction procedure to gain some fluency to improve their reading. Our study compared well with others because much of the literature focussed on phonetic decoding versus sight word recognition. In the literature the sight word method has often been found to be superior to the phonetic approach for the learning of new words. The phonetic approach has been found to be superior for the transference of skills, Ehri and Roberts, (1979). Comparing my study to Ehri and Roberts, (1979), "Do Beginners Learn Printed Words Better in Context or in Isolation?", my experimental group using a flash card only method of learning new words had their largest gains in decoding and word recognition and their smallest gain in comprehension which was very similar to the results in Ehri and Roberts, (1979), where they felt that context readers appear to learn more about word meanings and less about the orthographic identities of words than subjects using words on flash cards.

A limitation was that I anticipated having more time to

conduct the reading interventions than I actually wound up with. In addition the study was disrupted by the loss of two students at the beginning of the study.

One factor I did not control for was the possibility that the control group's method of learning missed words involved more effort than the experimental group's method. This is a possible explanation for the discrepancy in the two group's scores because some of the learned helplessness that plagues some special education students prevents them from making too much effort. In other words some students in the control group could possible begrudge the fact that they had to do a little more work than the experimental group because they were doing dictionary work.

For me the implications of the study are important because of the reading problems of classified children. The implication is that although these students may have gotten off to a slower start there are interventions that can help them become better readers. As I work with my students, everyone of them being a number of grade levels behind in reading, I am very moved by their reading challenges. As most people would agree reading is a key to getting anywhere in our society.

In conclusion, the experimental group using the direct instruction flash card method with a basal showed slightly larger gains of .7 - 2 months than the control group did using the more traditional method of looking up a definition

and writing a sentence. The hypothesis that increased word recognition scores lead to higher grade level scores was not conclusively demonstrated. However, the results are positive enough to support continued research. Children who have not succeeded in using phonics while learning to read can fall behind their peers and may never catch up. Although the differences between the experimental group and the control were insignificant, the experimental group showed a larger increase in scores. What this means is that direct instruction flash card procedure may be an effective way to build word recognition and improve a disabled reader's fluency.

BIBLIOGRAPHY

Bryant, N. D., Fayne, H. R., & Gettinger, M., (1986). Applying the Mastery learning Model to Sight Word Instruction for Disabled Readers. Journal of Experimentation Education, 33, 461-468.

Carnine, D. W., (1977). Phonics Versus Look-Say Transfer to New Words. The Reading Teacher, 31, 29-35.

Ceprano, M. A., (1982). The Influence of Two Methods of Teaching Reading on Beginners' Perceptions of the Reading Process. Annual Meeting of the Eastern Regional Conference of the International Reading Association, fourth, Boston, MA.

Ehri,L. C., and Roberts, K. T., (1979). Do Beginners Learn Printed Words Better in Context or in Isolation. Child Development, 50, 675-685.

Ehri, L. C. and Wilce, L. S., (1983). Development of Word Identification Speed in Skilled and Less Skilled Beginning Readers. Journal of Educational Psychology 75, 1, 3-18.

Fowler, W., (1988). Decoding Skills and the Remedial Reading Program. Viewpoints 120.

Gaskins, I. W., Downer, M. A., Anderson, R. C., Cunningham, P. M., Gaskins, R. W., Schommer, M. and Teachers of Benchmark School, (1988). A Metacognitive Approach to Phonics: Using What You Know to Decode What You Don't

Know. Remedial and Special Education 9 (1), 36-41.

Gough, P.B. and Tunmer, W.E., (1986). Decoding, Reading, and Reading Disability. Remedial and Special Education 7 (1), 6-10.

Hargis, C. H., Terhaar-Yonkers, M., Williams, P. C. & Reed, M. T., (1988). Repetition Requirements for Word Recognition. Journal of Reading , January.

Marston, D., Deno,S. L., Dongil, K., Kirk, D., & Rogers, D., (1995). Comparison of Reading Intervention Approaches for Students with Mild Disabilities. Exceptional Children 62 (1), 20-37.

Mccabe, D., (1982). A Common Sense Approach to Controlled Word Lists. AVKO Educational Research Foundation.

Perfetti, C. A. and Hogaboam, T., (1975). Relationship Between Single Word Decoding and Reading Comprehension Skill. Educational Psychology 4, 461-469.

Sainz, J., and Biggins, C. M., (1988). Phonics and Comprehension A New Look. Tenth Annual Read-On Rally of the New Jersey Chapter of Literacy Volunteers of America.

Samuels, S. J., (1987). Information Processing Abilities and Reading. Journal of Reading, 20 (1), 18-22.

Stanovich, K., (1986). Mathew Effects in Reading: Some Consequences of Individual Differences in the Acquisition of Literacy. Reading Research Quarterly, XXI/4.

Walsh, D. J., Price, G. G., & Gillingham, M. G., (1988). The Critical but Transitory Importance of Letter Naming. Reading Research Quarterly, XXIII/1.

Wolf, M., Bally, H., & Morris, R., (1986). Automaticity, Retrieval Processes, and Reading: A Longitudinal Study in Average and Impaired Readers. Child Development, 57, 988-1000.