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**THE EFFECT OF DIRECT INSTRUCTION IN
PHONEMIC AWARENESS, MULTISENSORY PHONICS, AND FLUENCY
ON THE BASIC READING SKILLS
OF LOW-ABILITY SEVENTH GRADE STUDENTS**

by

Geri Marshall Mohler

A DISSERTATION STUDY

**Presented to the Faculty of
The Graduate College at the University of Nebraska
in Partial Fulfillment of Requirements
For the Degree of Doctor of Education**

**Interdepartmental Area of
Major: Administration, Curriculum and Instruction**

Under the Supervision of Professor Miles Bryant

Lincoln, Nebraska

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DISSERTATION TITLE

The Effect of Direct Instruction in Phonemic Awareness, Multisensory

Phonics, and Fluency on the Basic Reading Skills of Low Ability

Seventh Grade Students

BY

SUPERVISORY COMMITTEE:

APPROVED

DATE


Signature

8-9-02

Miles Bryant
Typed Name


Signature

8-9-02

Ali Moeller
Typed Name


Signature

8-9-02

Ruth Heaton
Typed Name


Signature

8-9-02

Joan Erickson
Typed Name

Signature

Typed Name

Signature

Typed Name



**THE EFFECT OF DIRECT INSTRUCTION IN
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**Gerri Marshall Mohler, Ed.D
University of Nebraska, 2002**

Adviser: Miles Bryant

This study explored the effects of a program of direct instruction in phonemic awareness, multisensory phonics, and fluency on comprehension, word recognition, phonemic awareness, spelling, and oral reading fluency on 25 low-ability, high risk seventh grade students. Twenty-five students were given direct instruction in these three areas over the course of a year. Approximately 43 minutes per day were devoted to this instruction. Periodic assessments were given to capture gains in the students' basic reading skills. A repeated measures t-test was used to measure change in five different pre- and posttest assessments: 1) total reading score, 2) word recognition, 3) phonemic awareness or correct letter sequence, 4) spelling or words spelled correctly, and 5) oral reading fluency. Differences in the mean scores on the pretest given at the end of the year were all significantly different for each of the five assessments.

Regression analysis of individual and group performance produced less robust results. Models were analyzed looking at whether or not the increase (slope) in learning differed significantly from 0 for each individual student and for eight subgroups: 1) males and females; 2) Handicapping condition (Resource student, ELL student, or students with a cognitive disability), and 3) for students who began the year at one of three different reading levels—first, second, or third. Some models achieved significance.

Based on the results of this study, three recommendations were made: 1) in order to improve the the reading skills of low ability middle school students, a curriculum that includes phonemic awareness, phonics instruction and fluency training may produce significant gains in the decoding skills of these high-risk students; 2) in order to help future teachers meet the full range of linguistic needs represented in classrooms, pre-service preparation in the teaching of reading should include work in the basic phonics approaches; and 3) the diagnosis of a child's phonemic awareness and phonics ability should be an integral part of the learning assessments that occur in the elementary grades.

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CHAPTER I

INTRODUCTION TO THE STUDY

"The teaching of reading is...rocket science. The mini-war between phonics and whole language is ending." With those words in the January, 1999 issue of NEA Today, National Education Association president, Bob Chase, announced the reading armistice (p. 2). The two sides have called a truce and have agreed that there must be a balance between what they have both resolutely advocated. The truce has been a long time coming. It has been over 100 years since educators became divided over how to teach reading—with phonics or with whole words.

The ability to read well continues to be an essential skill which determines success in most areas of life. "Learning to read is critical to a child's overall well-being. If a youngster does not learn to read in our literacy-driven society, hope for a fulfilling productive life diminishes" (Lyon, 1998b, p. 14). Some children learn to read and write with ease, understanding that letters on a page can be sounded out to make words and they can read and comprehend words they have never seen before—almost by magic. However, the magic of this effortless journey is available to only 5% of the population. Another 20% to 30% learn to read relatively easily once exposed to any formal instruction. For 60% of our children, reading is a much more formidable challenge and for 20% to 30% of these, reading is one of the most difficult tasks that they will have to master throughout their school years (Lyon, 1998b). By the end of the first grade, we begin to notice substantial decreases in these children's self-esteem, self-concept, and motivation to learn to read. Such experiences and attitudes increase the likelihood that these children will never become truly literate, will leave school before graduation, will become a teen parent, and will be unemployed as a young adult (Edelmann, 1988).

Poor reading skills are blamed for many of our society's ills, from behavior problems to drug and alcohol abuse and prison overcrowding. In fact, recently the National Institute of Child Health and Human Development (NICHD) has been mandated by the National Institutes of Health (a federal agency that emphasized basic biomedical science and health-related research), to research beginning reading instruction. The assertion of the

NICHD is that reading is no longer just an education problem but has become an issue of public health (Lyon, 1998b). While the deleterious effects of not learning to read are apparent, what has not been so obvious is the exact or best way to remedy the situation. The fact that we have not reached a consensus on how best to teach children to read is possibly the major reason we are still having problems. The dispute has been mainly about whether it is skills-based reading instruction (specifically, the teaching of phonics) or meaning-emphasis/whole word instruction (currently known as whole language) that is the best way. Chapter II, the literature review, will further explore the content of this dialogue but a brief explanation of these philosophies or methodologies is needed here.

The first whole word method is said to have started in 1846 with the word “cow” (Flesch, 1955). It seems a young teacher was talking with his landlord’s five-year-old daughter about things going on at the farm such as her father milking the cow. Just then his eye caught the word *cow* on the paper he had laid down. He called the child’s attention to the cow outside and to the word on the paper telling her the word is the name of the animal her father was milking. The small child looked into the teacher’s face, her eyes lit with her sudden knowledge. She grabbed the paper and ran to her mother, exclaiming: “I know what it means. It is a cow, just like papa is milking!”

This innocent scenario was supposedly the beginning of the use of the whole word method and, consequently, the debate over the best way to teach reading. Reading instruction became a national issue when Rudolph Flesch published his book, Why Johnny Can’t Read (1955), which contained the above story. He opposed the whole word method prevalent at the time and gave helpful but unresearched reasoning for his stance. The debate continued through Dr. Jeanne Chall’s research and publications beginning with Learning to Read: The Great Debate (1967). Her research showed significant effects in reading development when phonics instruction was used. Subsequent researchers and reviewers confirmed this advantage (e. g., Barr, 1972, 1974, 1975; DeLawter, 1970; Elder, 1971; Evans & Carr, 1983; Guthrie, Samuels, Martuza, Seifert, Tyler, & Edwall, 1976; Johnson & Baumann, 1984; Peterson, 1979; Resnick, 1979).

The controversy continued with more fuel being placed on the fire during the late

60s, and 70s and 80s as Frank Smith and Ken Goodman presented their rationales for teaching reading by keeping words whole and not breaking them down into parts as phonics does (Goodman, 1967; Goodman, 1986; Goodman, 1989a; Smith, 1973; Smith & Goodman, 1971). Then in 1985, the commission that developed Becoming a Nation of Readers (Anderson, Hiebert, Scott, & Wilkinson, 1985), concluded that “isolating the sounds...and teaching children to blend the sounds of letters together to try to identify words are useful instructional strategies” (p. 42).

In 1994 the National Assessment of Educational Progress (NAEP) revealed its findings that California reading scores were among the worst in the nation (NAEP, 1994). California had wholeheartedly advanced the cause of whole language (as Goodman’s whole word method had been named) ten years earlier. Many would claim that the poor results were directly related to immigration and non-English speaking test-takers. However, of the 59% of California’s fourth graders who were reading below the basic level, 49% came from homes where parents were college-educated (Lyon, 1998a). In the meantime, meticulous research has been conducted by various university institutions, much of it federally funded. The results of these very recent studies have disclosed the noteworthy probability—phonics and whole language methods should be taught in a balanced system of reading in order to provide the best instruction for the most children (Jones, 1996; National Reading Panel, 2000; Shefelbine, 1996).

Five specific areas have been delineated where this balance should take place (Manifesto, 1991). There should be:

1. balance between teaching and facilitation of children’s learning,
2. balance between different approaches,
3. balance between use and awareness of language,
4. balance between incidental intervention and planned lessons,
5. balance between real books and published teaching materials.

We now know that balance is the key. A comprehensive approach is necessary if we are going to make most students successful. Balance, however, does not mean equal time spent on all areas for each child but should be weighted according to the needs of any individual

student. Students learn in many ways; we need to be able to teach in many ways. Phonics is restricted without whole language; whole language is not whole without phonics. It is possible we had no choice but to experience this war—pendulums swing from one extreme to the other so the middle can be discovered. The war may be over but the battle has just begun to right the wrongs, repair the damage, and heal the wounded from this age-old conflagration.

Problem Statement

As will be seen later, one of the discrepancies between the two philosophies of teaching reading is the theory of reading acquisition endorsed by the two factions. Whole language champions maintained that reading is acquired through immersion and experience and that the way to proficient reading is to read—not to be “taught” to read (Smith & Goodman, 1971). Reading classrooms with the whole language philosophy may exist under the assumption that teachers function “primarily as creators of contexts and as facilitators of learning, not as the source and transmitter of knowledge” (Reyes, 1991, p. 166).

Meaning is the emphasis in this approach, with the understanding of written language being thought of as something to be acquired as easily and naturally as its spoken counterpart. This philosophy is also known as “contextualist” (Vellutino, Scanlon, & Tanzman, 1994, p. 280) because readers are thought to construct the meaning of what they are reading from the context of what they read. Words are not taken out of the context of the good literature that is presented to children and learned according to their sound structure or sound-symbol correspondences, except for incidentally. Instead, words are to be learned as whole units with the context conferring meaning on the printed words and the children generating and confirming expectations as to the probable identity of words that appear in the text. Goodman (1967) referred to this as a “psycholinguistic guessing game” that depends primarily on adequate language comprehension ability and relevant knowledge. Children were encouraged to skip words, look at pictures, guess what the words might be, ask, or read on and then return to figure out the unknown words. This contextualist view of reading, therefore, “assigns greater weight to language comprehension processes than to facility in decontextualized word identification at all stages of reading skills acquisition”

(Vellutino et al., 1994, p. 280). In addition, whole language theorists and teachers did not often use isolated skill instruction or predetermined skill sequences in their classes, preferring instead to rely on the children's individual needs and interests of the moment (Goodman, 1986; Spear-Swerling & Sternberg, 1996).

The phonics or code-emphasis proponents, on the other hand, claimed that reading is a developmental skill and that readers go through necessary stages, albeit at different rates, in their attainment of this skill. The developmental theorists, as opposed to the contextualist theorists of whole language, believed that reading stages build on one another and that skipping any stage in instruction can be detrimental to a child's progress (Adams & Bruck, 1995; Beck & Juel, 1995). Developmental theorists do teach isolated skills although not necessarily out of the context of the stories being read. They may also depend upon predetermined skill sequences because of a belief that no assumptions should be made about what students know or can learn on their own—nothing should be left to chance. In this method of instruction, sound-symbol correspondences may be taught explicitly (children learn the sounds of individual letters) or implicitly (children imply the sounds based on observing several words with the same letters). The sequence of skills was not standard and can be very flexible based on the stories being read or the stories may be chosen based on the skill being taught although there are many sequential programs available. The teacher, rather than the student, was more likely to be the supplier of knowledge and determiner of what the children would be learning.

What must be taken into account here is that many phonics proponents do not call their approach a method; rather, it is a body of knowledge that may be taught explicitly, as well as through experience and literature. Many of the adherents of the developmental theory are very creative, intuitive, holistic instructors but they also know when and how to include explicit instruction about the English language.

One of the main researchers for the developmental theory, Dr. Jeanne Chall (Chall, Jacobs, & Baldwin, 1983), proposed a five-stage theory. Stage 1 is characterized by readers learning to decode words from print to sound. Stage 2 readers cultivate this skill and take it further to the point of fluency and automaticity and become good comprehenders of what

they read. Stage 3 readers can then make use of their comprehension skills to learn new things, independently, from their reading. A modern society requires at least Stage 3 reading. In Stages 4 and 5 readers have the ability to accept different viewpoints as well as being able to synthesize and create new information (Chall et al., 1983). It should not be surprising if these stages appear to reflect the seven levels of Bloom's taxonomy of cognitive development (Bloom, 1956). Synonymous thought processes go into these similar stages. The difference is, it is possible to be able to reason at advanced levels without having the ability to read at those levels. Chall's stages assume an independent ability to think and read at these advanced levels.

As discussed previously, science has finally discovered concrete answers to some of the questions raised by these two factions. The results show that there is a need for balance between the two methods using some techniques simultaneously and emphasizing others at other times (Chapter II will summarize these findings).

Caught in the crossfire of this battle that is finally diminishing are students who may now be suffering from poor reading achievement as a result of not receiving the type of reading instruction that could have benefited them or not receiving enough of this instruction—whether it be whole language or code-based or even something else. What is now surmised is that many students are lacking in their reading abilities as a result of not getting a complete program that fits their particular needs.

Students who have reached adolescence and are still unable to read face a dreadful battle as they leave the safety of their early education years and head into the upper grade levels. By the time these students arrive in middle school, it is often assumed that they will never learn to read well. At that time, the most some teachers feel they can do or know how to do is to give these students coping and compensating strategies such as study skills, semantic mapping, prediction strategies, locating information tactics, etc. These strategies are critical, but they do not usually translate into actually learning how to read if the basic skill of reading has not already been acquired.

This problem is a constant in our schools. The fact that reading instruction often ends at sixth grade makes it an even worse situation. This study addresses this complication

by asking these questions: Can students who have not successfully learned to read by adolescence be taught to read? It would seem possible, but the question is—how can they or should they be taught so that they will become better readers if what they have received up to this point did not work? Another question that needed to be answered is if English Language Learners (ELL) new to the English language, and therefore at the same reading level, can be taught with the same methods? A final question is: How will we know if the instruction has been successful?

Context of the Study

This brief history of the reading wars brings me, the author and researcher of this study, to a moment in time that concerns me: I have been a reading teacher at the middle school level since 1987. In 1996, when my district began to require inclusion of special education students in the regular classroom, I started to work with the special education students that were generally being pulled out of most core class instruction to receive their “special” education. With inclusion, reading instruction began being provided by me with the special education teacher collaborating with me in the classroom rather than the students being pulled out. I enjoyed the collaboration, rapport, support, and advantages of having another teacher in the room with me. It became our goal to figure out what was needed to help these students learn to read—when they were already twelve to fourteen years old. Just prior to this time, I began tutoring in my home and eventually used one boy I tutored as the subject of my master’s thesis. He had made phenomenal gains on a standardized reading test after being tutored with the phonics method I was using. I could never prove that my instruction made the difference but it began my quest for more information and skills. Several years later, when I needed a dissertation topic, I decided I would once again use my own teaching as the basis of my dissertation study. I taught a group of 38 students for an entire school year using a curriculum, described in detail later, that I designed. Data were gathered and analyzed, all of which has resulted in this dissertation.

Purpose of the Study

The purpose of this study was to determine under what conditions the beginning stages of reading development, as envisioned by the developmental theorists, can be

acquired by older students who are poor readers. Students in this study were given not just strategies, but actual skills that they may never have learned or received in their primary school years when Stage 1 (decoding) and Stage 2 (fluency) reading skills should have been learned. Middle level students should be working on Stage 3 reading skills (reading to learn) which are virtually impossible to achieve unless Stage 1 and Stage 2 are mastered.

I developed the intervention curriculum described in this study over many years as a result of taking classes, attending workshops and conferences on multisensory direct instruction, and an immense amount of reading. I also tutored in my home. My school work informed my tutoring and vice versa. As teacher, researcher and author of the study, I wanted to find out if the program that I designed over several years of trial and error was truly improving the students' basic skills. The program was designed to provide intense instruction in basic reading skills such as phonemic awareness, phonics and reading fluency which, according to developmental theorists such as Chall et al. (1983) and Adams (1990), are necessary skills to attain and with which some children appear to have great difficulty. I worked specifically on this program since the inception of the middle school model in my school, two years previously. The first year of the middle school, I, with the assistance of the special education teacher on my team, designed a program with 20 low ability students that the special education teacher and I co-taught. This practice was not in accordance with the middle school philosophy which rejects the idea of ability grouping. However, we felt that the students made real progress so the next year we decided to include the 20 lowest ability students on the other seventh grade team as well. This would have happened regardless of whether I was working on my education doctorate degree but, I decided it would make a good study so I designed the present project.

Even though research recommended that reading instruction should be a balanced approach with both part-to-whole and whole-to-part instruction, I determined that most of my students were coming through the reading program in our district experiencing very little part-to-whole instruction. I felt this was a potential source for their problem. I also knew that about half of the lowest ability students would be English language learners (ELL) trying to learn to read and speak English at the same time. The reading and research

done prior to conducting the intervention, plus my teaching and tutoring experience, led me to believe I needed to focus on the missing components in the students' past instruction rather than trying to provide a balanced approach so I focused on phonemic awareness, phonics, and oral reading fluency.

Research Design

In this study, 38 seventh graders from a middle school in a Midwestern city completed a nine-month reading curriculum that was used to teach the very basic skills in reading which many experts have determined are essential for the first two stages of reading described above. Students were placed in the intervention group if their reading scores fell below the 25th percentile according to the Stanford Diagnostic Reading Test (SDRT) (Karlsen & Gardner, 1995) or on a fourth grade level Curriculum-Based Measurement (CBM) passage. Eventually, students were further divided according to whether they were at Stage 1 or Stage 2 in their reading development.

The difficulty of measuring change in students with learning disabilities, especially in older learners, has been a subject of interest for sixty years. Most standardized tests are not sensitive enough to detect minute changes in learning growth and are geared toward group averages rather than individual growth or change (Lyon, 1994; Madelaine & Wheldall, 1999; Rogosa, Brandt, & Zimowski, 1982). This study attempted to promote a union of the Individual Growth Curve (IGC) model (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1994; Rogosa et al., 1982; Rogosa & Willett, 1985) and CBM as a valid method of measuring change for students with who are older and have difficulty reading.

The IGC model has been recommended as an appropriate model to measure effects of interventions on students with learning disabilities. This model provides a method of analyzing learning in students based on several time points in an intervention. It does not rely on difference scores at the beginning and end of an intervention to determine progress but rather the rate of change during the intervention as well as the differences between individuals within the intervention. This model offered promise as a basis for both defining and diagnosing learning disability and for quantifying and assessing response to an intervention or treatment (Francis et al., 1994; Rogosa et al., 1982; Rogosa & Willett, 1985).

Curriculum-Based Measurements (CBM) were developed in response to the dissatisfaction with standardized tests that only provide summative measures so are of little help in monitoring and adjusting instruction during the school year. Standardized tests also are not sensitive enough to detect small changes in performance. CBM has been proven to be both a reliable and valid assessment of basic learning that is sensitive to individual growth in academic performance (Deno, 1985). CBM procedures are comprised of a set of specific measures that can be applied to quantify student performance in reading, written expression, spelling, and arithmetic. The assessments, which will be described in more detail later, can be taken quickly (one to three minutes) and often (weekly) and are made up of materials from the actual curriculum provided the students, with the results being compared to normed standards within a school district or building rather than national norms.

The independent variables measured were: (1) total reading: based on the Total Reading Score (TRS) from the SDRT (Karlsen & Gardner, 1995); (2) word recognition: a count of Words Read Correctly (WRC) on the Slosson Oral Reading Test (SORT) (Slosson, 1982); (3) phonemic awareness (PA): based on Correct Letter Sequence (CLS), a variation of CBM spelling assessments using the Morrison-McCall Spelling Tests (Morrison & McCall, 1951); (4) spelling: taken from Words Spelled Correctly (WSC) also using the Morrison-McCall Spelling Tests; and (5) reading fluency based on Oral Reading Fluency (ORF) measures from CBM probes which is a count of words read correctly for one minute while reading a passage taken from district reading materials. School mandates determined the comprehension and reading fluency data that was collected. The word recognition data collection was a choice I made. The spelling assessment was a standard aspect of the multisensory program I used and the PA data was an experimental method I designed using a modified CBM spelling assessment. These assessments will be described in more detail later.

Most students were given the SDRT during their sixth grade year and again at the end of the study year. The scores from only those students who were given both pre- and post- assessments were reported. The National Curve Equivalent (NCE) scores of the SDRT were used for analysis for this variable. NCE scores are better for comparison

purposes than the more commonly reported percentile score because they are on an equal interval scale rather than a and are more reliable for comparison than percentile scores.

The SORT (Slosson, 1982) was administered during the first week of school and was repeated at the end of the school year. These scores were recorded as the number of words read correctly (WRC) from the list of progressively harder words provided. These scores also were analyzed as pre- posttest scores.

The other measures (CLS, WSC, and ORF) were assessed more regularly—usually once a month. Only student scores with at least five data points for each of these variables would be analyzed for any given set.

The Morrison-McCall Spelling Tests (Morrison & McCall, 1951) were given monthly using different word lists each month. These scores were recorded in two ways—the number of words spelled correctly (WSC), which denotes an either right or wrong assessment, and correct letter sequence (CLS), which is more of a determiner of phonemic awareness and spelling development. CLS scores were recorded as a percentage of the total possible correct letter sequences determined from the words given which is a Curriculum-based method (CBM). Spelling assessments using CBM were not based on perfectly spelled words but on the correct sequence of letters written at seven seconds per word (Deno, 1985). For example, a student may be able to give the correct first and last letter of the word but not any in the middle. The student will receive points for those correct letters. Later in the year the student may be more capable of reproducing medial sounds and get some vowels right in addition to getting a few more words spelled correctly. If only correctly spelled words are taken into consideration, there may be no way to determine if there is growth for that student. Because spelling is a developmental skill (Ehri, 1987; Moats, 1995b), this kind of assessment is much more useful than counting a word as either correct or not correct. Spelling development may improve drastically with a student still rarely getting any word 100% correct. CBM spelling is usually done as a fluency measure with a new word given every seven seconds and the words are taken from reading passages found in curriculum materials being taught. This study used the CBM style of determining correct letter sequences without the timed variable. The measures taken for this study were

not words taken from the reading curriculum but instead used spelling words from the Morrison-McCall spelling lists (Morrison & McCall, 1951). These eight lists of 50 words get progressively more difficult within each list. Examples of this assessment can be seen in Appendix A.

In addition, monthly measures of ORF were assessed regularly according to CBM probes as mandated by the school district. In CBM probes (Meltzer, 1994; Shinn, 1998), text from actual materials used at each grade level in a school or district are used to assess student progress. Norming is done first by testing a random sample of students at each grade level in the school district during the fall, spring, and winter with data then used to determine percentile scores for that grade level in the district.

Students in this study were given CBM reading fluency probes monthly. Using the CBM procedures, delayed readers were tested against their current reading level, rather than their grade level. When students achieved fluency levels at about the 25th percentile (according to district norms) for that reading level, they were moved to the next grade level for the following probe. CBM reading probes are typically given weekly in elementary settings where one teacher, who may have only four or five special education students, sees the same students all day long. In the middle school setting, however, when students are seen by their reading teacher only one period a day, and there are as many as 20 or 30 special education students on one team, monthly probes were deemed the only sensible way to obtain the scores or there would be little time for instruction.

CBM is useful in evaluating immediately which students are in need of more intensive instruction, or are above level, because the assessments are quantifiable and taken frequently. Curriculum-based measurements also help to indicate individual and group differences so instructional success or non-responding can be determined as well as what may be the contributing factors for those results. I had hoped that most students in the study would have regular CBM assessments in their sixth grade year which could be used as a baseline for this study. Unfortunately, CBM testing was not consistent in my building during the students' sixth grade year so baseline data prior to the study were not available.

Research Questions

This study will address the following topics:

1. What changes in total reading scores, word recognition, phonemic awareness, spelling and reading fluency occur in the reading ability of low-achieving 7th grade students as a result of instruction in PA, phonics, and fluency training as measured by pre- and posttests of the (a) SDRT using the Total Reading Score (TRS) and (b) the SORT scores recorded as the number of words read correctly (WRC) for word recognition; (c) correct letter sequence (CLS) for PA and (d) words spelled correctly (WSC) as determined by the Morrison-McCall spelling lists for spelling; and (e) oral reading fluency (ORF) scores through the use of CBM reading probes for reading fluency?

Based on the reading I had done prior to the study year, I believed that the TRS scores might not be sensitive enough to reliably demonstrate growth in the group of students I taught. I also did not expect the WSC scores to depict much progress because they are based only on correct or incorrect spelling. My experience with giving the SORT to produce pre- and posttest improvement was such that I felt there might be noticeable improvement on this variable because of the amount of time spent on decoding and working with words out of context in my classroom. I had the most confidence in the other two variables, correct letter sequence (CLS) and oral reading fluency (ORF) for telling me whether the intervention worked for individuals and for whom it did not. Pre- and posttest averages for these variables will be analyzed with repeated measures t-tests. The results can be stated as these null hypotheses:

H01: There will be no significant differences in pre-posttest scores on the SDRT Total Reading Score (TRS) as a result of instruction in phonemic awareness, phonics, and fluency training.

H02: There will be no significant differences in pre-posttest scores for word recognition on the SORT in words read correctly (WRC) as a result of instruction in phonemic awareness, phonics, and fluency training.

H03: There will be no significant differences in PA using percentage of correct

letter sequences (CLS) pre- posttest scores on the Morrison-McCall spelling tests as a result of instruction in phonemic awareness, phonics, and fluency training.

H04: There will be no significant differences in words spelled correctly (WSC) pre- posttest scores on the Morrison-McCall spelling tests as a result of instruction in phonemic awareness, phonics, and fluency training.

H05: There will be no significant differences in oral reading fluency (ORF) pre- posttest scores as a result of instruction in phonemic awareness, phonics, and fluency training.

2. A second area of concern and interest that was addressed in this study was: Can the analysis of these scores be used to understand and compare the change made by subgroups and individuals within that group who received this same treatment?

To answer this question, an analysis of CLS, WSC, and ORF scores was made to try to understand them in the light of the IGC model. This model allowed for individual and subgroup analysis as compared to the change made by the entire group who received the same treatment. Individual and subgroup results were interpreted using a regression analysis. Three subgroup areas were examined: (1) gender; (2) handicapping condition, which consisted of ELL, Resource (learning disabled), and Developmental Learning Program (DLP) or cognitively disabled students; and (3) Initial Reading Level (IRL) which consisted of groups of students and the reading level—first, second, or third grade—that they began the intervention study. The results of regression analyses of these measurements for individuals with five or more data sets and subgroup scores were charted and discussed in terms of what this kind of information can offer the classroom teacher.

Assumptions

I held to the following assumptions prior to the onset of this study:

1. PA, spelling, and ORF are developmental and receptive to remediation in older students.
2. PA, spelling, and ORF were useful measures to demonstrate reading growth as it was

perceived for this study.

3. Reading passage choices from the district curriculum could be used reliably to reflect the reading level of the student.
4. CBM test data of PA and ORF were reliable and valid.
5. CBM probe assessments and other measures designed for this study fit the Individual Growth Curve model.
6. There is much heterogeneity in true growth (Francis et al., 1994, p. 32) so difference in student response was expected and would not signify failure of the method if not all students showed progress.

Limitations and Delimitations

The generalizability of this study was limited due to the fact that it was not clinical but based on real classrooms in a real school. In addition, the inability to (1) select the participants (including the instructors), (2) control the addition and attrition of the participants, or (3) be totally sure of compliance to the program by teachers not fully trained or supervised, complicated the research effort. In addition, the study participants were placed in a non-random fashion in the classroom and no adjustment was possible even when one or more of the students had severe dysfunctional behavioral or emotional challenges. Disruptions can and do significantly impact the amount of learning possible in any given classroom setting. Incorporating five teacher-researchers (and a few other adults who also became involved) in this study kept these potential disruptions to a minimum and there was no way to avoid the addition (due to new students in the school who qualified for special education services) or attrition (due to moving or expulsions) of students as the study progressed.

This study also was limited in that the intervention being used was subject to change on a daily basis depending on the perceived needs of the students, the schedule changes that occurred within a flexible school setting, and the decisions made by the teacher-researchers as the year progressed. For example, the students in the higher group had more ability than the students in the higher group the year before so some changes were made in their spelling assignments as a result. However, the basic premise of the instruction remained

which was to teach basic reading skills at the students' developmental levels. The study will be difficult to replicate because of the unusually high ratio of adults to students in a middle level classroom setup and the fact that the study was being conducted over a full school year rather than over several weeks. The fact that there was no control group and only one school building involved in the intervention may keep this study from being looked upon as significant. The intention was to have a control group but there were great difficulties in trying to secure one so this part of the research design had to be eliminated. Also, my enthusiasm and bias, as the major teacher-researcher, may have had a significant effect on the outcome and may not, then, be considered scientifically sound research (Lyon & Moats, 1997).

Significance of the Study

The significance of this study lies in the fact that reading has become a public health issue and studies are needed to begin dealing with this issue at all levels of education. When reading the current literature on research in reading remediation, it becomes apparent that very little has been conducted with students beyond the elementary school years, (Bruck & Treiman, 1992; Shaywitz, 1998; Wise & Olson, 1995) particularly using CBM methods of assessment (Espin & Deno, 1993). In addition, new methods of measuring change in learning are being called for which can be used to assess individual responses to treatments and that can reveal even small amounts of progress (Berninger & Abbott, 1994). This type of assessment is particularly needed in measuring growth in abilities or a lack of response in the learning disabled population. The present study was an attempt to address these issues and, in that sense, should be seen as sorely needed and relevant. Even though the study was replete with limitations, it was those very limitations that are the reality of the classrooms in which students with reading difficulties reside. The study was, therefore, a true model of the ecological validity required to demonstrate and study the effectiveness of a year-long intervention technique. This is important because it confirmed for me that classroom research can be conducted without the fine-tuning that clinical research requires and still can help the typical classroom teacher understand that attempts to analyze the results from experimental instruction can be accomplished even when difficulties prevail.

Classroom research is beneficial to our students when their teachers plan for and execute instruction that is going to be examined critically and analytically.

Terminology

Alphabetic principle

The assumption underlying alphabetic writing systems that each speech sound or phoneme of a language should have its own distinctive graphic representation (Harris & Hodges, 1995, p. 7).

Automaticity

Fluent processing of information that requires little effort or attention, as sight-word recognition (Harris & Hodges, 1995, p. 16).

Bottom-up approach

Refers to a kind of processing in which meaning is derived from the accurate, sequential processing of words. The emphasis is on the text rather than the reader's background knowledge or language ability (Gunning, 2000, p. 9).

Contextualist reading theory

The theory that words are to be learned as whole units with the context conferring meaning on the printed words and the children generating and confirming expectations as to the probable identity of words that appear in the text.

Correct Letter Sequence (CLS)

A scoring procedure for spelling, devised by White and Haring (1980), that was designed to be more sensitive to changes in spelling skills. It necessitates counting each letter in a word that is in the correct sequence for the actual spelling of the word. Each word has a potential point value of one point more than the actual number of letters in the word (Marston, 1989).

Curriculum-based measurement (CBM)

The standardized, repeated measurements of a specific skill using materials drawn from the students' curriculum, or materials of comparable difficulty which are similar to the curricular materials used in daily instruction (Deno, 1985; Deno, 1987; Fuchs & Deno, 1992)

Decoding

Analyzing spoken or graphic symbols of a familiar language to ascertain their intended meaning (Harris & Hodges, 1995, p. 55).

Developmental reading theory

The theory that reading is a developmental skill and that readers go through necessary stages, albeit at different rates, in their attainment of this skill; the belief that reading stages build on one another and skipping any stage in instruction can be detrimental to a child's progress. (Chall et al., 1983)

Direct instruction

A method of teaching wherein the teacher directly instructs students in a planned way and usually systematically rather than arbitrarily or by observing student need.

Dyslexia

A developmental reading disability, presumably congenital and perhaps hereditary, that may vary in degree from mild to severe (Harris & Hodges, 1995, p. 63).

Encoding

Sound-letter correspondences, or spelling.

Explicit phonics

Children are directly told and practice saying and writing the sounds of individual letters and groups of letters (see phonograms).

Fluency

Freedom from word-identification problems that might hinder comprehension in silent reading or the expression of ideas in oral reading; automaticity (Harris & Hodges, 1995, p. 85).

Grapheme

A written or printed representation of a phoneme, as *b* for /b/ and *oy* for /oi/ in *boy*. In English, a grapheme may be a single letter or a group of letters. It includes all the ways in which the phoneme may be written or printed (Harris & Hodges, 1995, p. 101).

Implicit phonics

Children are expected to induce the sounds that correspond to letters from accumulated auditory and visual exposure to words containing those letters.

Morphophonological structure

The structure of words based on the morphology and phonology of words. Morphology is the study of the minimal units of meaning, called morphemes, and investigating the possible combinations of these units in a language to form words (i.e., “im” + “perfect” + ion”). Phonology involves analyzing how sounds function in a given language or dialect. Morphophonology, then, studies the change in the phonology of words when the morphemes change form (i.e., nation, national, native).

Multi-sensory instruction

Using hearing, seeing, speaking, writing, and movement in all aspects of instruction.

Oral reading fluency (ORF)

The number of words read correctly in a one-minute time period using reading probes of approximately 250 words (Deno, 1985; Deno et al., 1982)

Phoneme

A minimal sound unit of speech that, when contrasted with another phoneme, affects the meaning of words in a language, /b/ in *book* contrasts with /t/ in *took*, /k/ in *cook*, /h/ in *hook* (Harris & Hodges, 1995, p. 183).

Phonemic awareness (also phonological awareness)

Awareness of the constituent sounds of words in learning to read and spell. The constituents of words can be distinguished in three ways: a. by syllables, as /book/. b. by onsets and rimes, as /b/ and /ook/. c. by phonemes, as /b/ and /oo/ and /k/ (Harris & Hodges, 1995, p. 187).

Phonemic segmentation

The ability to analyze and break down a word into its individual phonemes.

Phonetic recoding

One of the three phonological processing components. It is assessed by observing performance on digit span, word span, and sentence repetition tasks.

Phonetics

The study of speech sounds, generally conducted within one of three branches of investigation: acoustic phonetics, articulatory phonetics, and auditory phonetics (Harris & Hodges, 1995, p. 184).

Phonics

A way of teaching and spelling that stresses symbol-sound relationships, used especially in beginning instruction (Harris & Hodges, 1995, p. 186).

Phonograms

Letters and groups of letters that represent the sounds of our language (e.g., ea, ow, ar, kn, ough)

Phonological coding

The ability to use the speech code to store and retrieve information.

Phonological processing

Encompasses at least three different components or skills: phonological awareness; phonological recoding in lexical access; and phonetic recoding in working memory

Phonological recoding

One of the three phonological processing skills. The ability to access phonological information rapidly from a lexical store is assessed typically by tasks requiring rapid retrieval and naming of objects, letters, and colors.

Recoding

Changing information from one code into another, as writing into speech (Harris & Hodges, 1995, p. 215).

Rime

A vowel and any following consonants of a syllable, as /ook/ in *book* or *brook*, /ik/ in *strike*, and /a/ in *play* (Harris & Hodges, 1995, p. 221).

Skill

An acquired ability to perform well; proficiency (Harris & Hodges, 1995, p. 235).

Strategy

A systematic plan, consciously adapted and monitored, to improve one's performance in learning (Harris & Hodges, 1995, p. 244).

Synthetic phonics

A part-to-whole phonics approach to reading instruction in which the student learns the sounds represented by letters and letter combinations, blends these sounds to pronounce words, and finally identifies which phonic generalizations apply (Harris & Hodges, 1995, p. 250).

Top-down approach

Refers to deriving meaning by using one's background knowledge, language ability, and expectations. The emphasis is on the reader rather than the text (Goodman, 1986).

Whole language

A concept that embodies both a philosophy of language development as well as the instructional approaches embedded within, and supportive of, that philosophy. This concept includes the use of real literature and writing in the context of meaningful, functional, and cooperative experiences in order to develop in students motivation and interest in the process of learning. It typically will not include explicit phonics instruction.

Word recognition

The process of determining the pronunciation and some degree of meaning of a word in written or print form (Harris & Hodges, 1995, p. 283).

Working memory

Short-term memory used as we read or listen to hold incoming linguistic information in phonological form while processing sentences.

CHAPTER II

THE LITERATURE REVIEW

Introduction

This section will discuss the differences between the two major philosophies of reading instruction, the findings from recent studies regarding these philosophies, and reactions to those findings. Then it will describe and justify the intervention methods used in this study.

What Were We Fighting For?

If “Stop! You’re both right,” was the eventual conclusion of the century-long war between the two methods of teaching reading known as code-emphasis (phonics) and whole language (as it is now called), why did the scientific community not see this sooner? What was so difficult about this debate that it seemed advocates were ready to die for their cause? Why was it that Louisa Moats and Reid Lyon (1993), current spokespersons for national research being conducted in reading disabilities, said without shame that the implementation of our understanding of learning disabilities has preceded, rather than followed, scientific development and examination of its basic constructs, concepts, and operation principles? How did we get so far off track? As will be seen in the following section, the problem seemed to have originated with the definition of reading disability and differences in perception as to the acquisition of reading ability and resulting reading instruction. A review of current literature in this area demonstrated that, for the most part, many age-old reading questions have now been answered.

Reading Disabilities--A Problem of Definition

Reading disabilities have been called many things. “Specific learning disability” is the common term in special education nomenclature but the term “dyslexia” also has come back into favor. Definitions of dyslexia in the past often told more about what the disorder is not rather than what it is. These are known as “exclusionary” definitions. The proposed definition by the World Federation of Neurology and the definition of learning disability employed in the Landmark Education for all Handicapped Children Act (PL 94-142) passed in the U.S. in 1975, respectively, are typical of exclusionary definitions: “Specific

developmental dyslexia is a disorder manifested by difficulty learning to read, despite conventional instruction, adequate intelligence, and sociocultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin” (Thomsen, 1984 p. 10). And, “The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.” (Federal Register, December 29, 1977, p. 65038).

These definitions, among other things, implied that dyslexia cannot be diagnosed in a child from a poor or unconventional background and it can only be identified if the reading disability exists in the absence of other problems that could lead to the reading difficulty (Lyon, 1995). Spear-Swerling and Sternberg (1996), in their book Off Track: When Poor Readers Become “Learning Disabled”, advanced the idea that definitions of learning disability and reading disability are vague because “there are practical incentives to keep definitions broad, in order to make educational services available to more children and to include more individuals in the learning advocacy movement” (p. 69). In addition, they maintained, only relatively recently has basic research begun to provide a more detailed picture of reading disability. Through hindsight, it has become obvious that we could not define what we could not understand. The working definition of dyslexia was not refined enough to understand the development of reading in general or to support adequate research for identification or prevention of the reading disorder.

In addition to the problem of definition was the problem of diagnosis. A child, at this time, was determined to be reading disabled based upon a discrepancy between his ability and his performance as measured by a normed test such as the Woodcock-Johnson Test of Achievement (Woodcock & Johnson, 1989). Typically, there must be a 20-point difference in these scores showing that the level of performance was at least 20 points below the level of assessed ability or potential (Lyon, 1995). This implied that someone who was not of average intelligence may not be diagnosed as having a reading disability—the difficulty in learning to read was expected in this person based on a lower intelligence level. This approach does not necessarily screen out children whose reading difficulties might be

caused primarily by inadequate schooling or limited exposure to reading readiness activities. Clay (1987) argued forcefully that the failure to control for the child's educational history was the major impediment to differential diagnoses of reading disability. She pointed out that the adverse effects of inadequate prereading experience, inadequate instruction, or both can often mask or even mimic the adverse effects of constitutionally based cognitive deficits. Discrepancy diagnoses are being called into question, although no clear-cut method has taken their place (Lyon, 1995). At the present time, 38 states use this discrepancy model (Fletcher et al., 1998).

Moats and Lyon (1993) stated that much of our research-based thinking about learning disabilities in the United States was predicated on this exclusionary and discrepancy-score information and on "ambiguously defined school-identified samples of children who have been administered technically inadequate measurement instruments and tests" (p. 287). These diagnoses, they contended, were further confounded by a tendency to interpret test data in the context of theoretical and conceptual frameworks of reading and reading development that have not been scientifically or clinically validated. It became very difficult, then, to talk about, study, and treat something that was so elusive and confusing.

While trying to determine the best reading instruction, most of the research has focused on code-emphasis and meaning-emphasis instruction and on various aspects of each kind of instruction. Briefly, the meaning-emphasis programs maintained that reading should be taught with whole words learned as units with the context and guessing being the means a child would figure out a new word. Subskills were not taught because it was felt they fragment the process and make learning to read more abstract and difficult (Goodman, 1986). This is also referred to as a top-down, or holistic, approach. Top-down processing referred to deriving meaning by using one's background knowledge, language ability, and expectations. The emphasis is on the reader rather than the text. Code-emphasis methods postulated that new words are best decoded by knowing the sound-symbol correspondences, often learned explicitly and sequentially. Code-based instruction, also known as a bottom-up approach, referred to a kind of processing in which meaning is derived from the accurate, sequential processing of words. The emphasis is on the text

rather than the reader's background knowledge or language ability. This literature review will establish that a blending of the two, with teachers being experts at both, was the final recommendation of many reading professionals.

Meaning emphasis

The meaning-emphasis approach has been responsible for several different methods for reading instruction based on the assumption that children have a natural ability to learn to read just as when they developed verbal expressive abilities and the basic necessary perceptual skills. Among these approaches are the whole language philosophy and pragmatism (Arwood, 1983). These methods or philosophies have many commonalities, particularly the use of whole words rather than parts to introduce reading, and the belief that these methods work best for language-learning disabled students who are auditorily impaired and need to rely on their visual learning style (McInroy, 1994).

Whole language. In his book, What's Whole in Whole Language?, Ken Goodman (1986) described the whole language philosophy as a top-down view of learning. He criticized the bottom-up view of moving from small to large units as an element of adult logic, not children's. Much of the whole language theory was a reaction to what was viewed as "mistakes" made in perceiving reading as something to learn from smaller bits and pieces to whole texts. These "mistakes" included controlled vocabulary, phonic principles, or short, choppy sentences in primers and pre-primers which produced non-text that were not coherent, were unpredictable, and violated the expectations of even young readers who knew already how a real story worked. Writing taught by drilling pupils on handwriting, spelling, and other mechanics, Goodman said, distracted children from what they already knew through oral language about producing whole, functional texts. Whole language teachers do not teach phonics, Goodman stated, instead, "children discover the alphabetic principle when they learn to write. There are relationships between letter patterns and sound patterns. They do what they do in all language learning: They search for rules" (p. 37).

Harris and Sipay (1985), discussed a rationale for using the whole-word method which included:

- (1) most children can learn to read by it;
- (2) words can be taught quickly and then

used to construct meaningful context—children read for meaning sooner than if a phonic method is employed; (3) some young children find it difficult to learn through a phonic method, especially one that depends on phonemic analysis and synthesis; and (4) a number of high-utility words are phonetically irregular (e.g., said, of), and therefore must be learned as wholes (p. 385).

Along this same line, Goodman (1986) stated that children who have trouble in reading and writing,

do have strengths—making sense of language is natural for people. But through lack of self-confidence and overkill on isolated skills, they don't recognize their own strengths. They think their use of legitimate comprehension and expression strategies is cheating. They feel guilty if they make sense of what they're reading without sounding out the words, if they skip words and enjoy their reading without worrying about remembering everything (p. 38).

A teacher who is a whole language advocate built upon student strengths instead of using a deficit model of teaching. Children were treated as capable and developing, not as incapable and deficient (Weaver, 1991).

In her book, Invitation (1991), Regie Routman explained why whole language was so necessary for kids who learned differently:

Fragmented instruction is particularly difficult for at-risk learners. While efficient language learners figure out what makes sense regardless of the instruction and ignore what doesn't fit, the at-risk population becomes further handicapped by splintered instruction. These are students who do not learn language efficiently.

They often are unable to filter out what doesn't make sense (p. 26).

These students, according to Routman (1991), may be able to successfully complete phonics workbooks or worksheets, but still be unable to apply those skills in a meaningful context. They need, she contended, to learn the skills in meaningful context, if and when needed, in order to help derive meaning from print. Oftentimes that does not happen in the classroom as Kenneth Goodman (1991) pointed out in a chapter he contributed to the book With Promise. While many educators believed that reading difficulties result from lack of

skill mastery or too little skill instruction, Goodman says that the opposite was more likely to be true. Many times readers in trouble suffered from too much skills instruction rather than too little. He believed they were focusing so much on the word calling skills that they lost the meaning of what they were trying to read. These same students' miscues, according to Goodman, were often mistakenly interpreted by diagnosticians as an indication of a need for more phonics instruction.

Pragmatism. Another view with a top-down approach was known as pragmatism. This is a term coined by C. S. Pierce in the late 1800s which referred to the study of how signs (the representation of meaning) were used to produce consequences (Arwood, 1983). It was a philosophical theory, not an approach or program. Arwood stated that "pragmatism was synergistic in nature" (p. 45). The pragmatism philosophy looked at the dynamics of language, cognition, and socialization functioning in an interactive manner. Communication development and learning were dependent upon the integration of socialization and cognitive information. Pragmatism focused on the communication and learning process—not the end or isolated products.

Within the pragmatism methodology was the concept of referential complexity. Neurological, visual information was easiest to process because it was constant. It eliminated the problem of displacement (McInroy, 1989). Displacement referred to the ability to understand related things that happened at a different time and in a different place, to be able to take another person's perspective, and to understand linguistic information (things that cannot be seen or felt). Visual information gave the student something concrete to refer to instead of requiring displacement. Creative writing is an example of an activity that is displaced, so it is extremely difficult for many students having language/learning disorders. They need something visual to get themselves organized. Visual information is constant; it does not disappear instantly as does auditory information. An educator using pragmatism methodology uses as many visual cues as possible to help students process auditory, displaced information. Language/learning disordered students usually have auditory processing deficits, so they must have the visual information to help them understand the auditory. While many whole language advocates adhere to these principles

and do much to make learning visual, the documents referred to here espousing these principles are actually principles of spoken language, not written. There is a difference.

These two reading instruction philosophies, whole language and pragmatism, are currently going through much scrutiny, in particular, whole language. Although many articles and books on whole language would have one believe that to provide anything less for children is to relegate them to the unskilled and unthinking classes for eternity (Goodman, 1998), analyses of the effectiveness of whole language have found that it does not seem to be particularly effective with children labeled as “disadvantaged” (Delpit, 1986, 1988; Stahl, McKenna, & Pagnucco, 1994; Stahl & Miller, 1989). Stahl and Miller (1989) could not find a single comparison of whole language instruction with children labeled as “disadvantaged” that favored whole language instruction. Although there was much that is valid and beneficial about meaning-emphasis approaches, it seems an important ingredient was missing.

Code emphasis

Over the years, code-emphasis reading methodologies have been in and out of favor with reading professionals. Flesch (1955), Chall (1967), and Chall et al., (1983), as mentioned in Chapter I, were instigators in attempting to achieve a more skills-based approach to reading when the pendulum swung away from it. Despite the seeming success and wide support of meaning-emphasis methods, code-based instruction has made another resurgence based on recent research which will be examined at length in this chapter. With code-emphasis instruction, children learned to read from the bottom-up. This referred to a kind of processing in which meaning was derived from the accurate, sequential processing of words. Bottom-up procedures were intended to make learning to read easier by breaking complex tasks into their component skills. Instruction proceeds from the simple to the complex (Gunning, 2000). First, children learn the names and shapes of the letters of the alphabet, then they learn the sound-symbol correspondences. Many different approaches to code emphasis reading instruction have been developed. Reading teachers who favor a more top-down approach to instruction maintain that reading should always be a meaningful experience, with all learning and practice done in the context of real stories and books, not

through drills and working with small pieces of language such as sounds. Some children, however, seem to require this kind of instruction as will be seen in the next part of this literature review. Because the research has pointed so favorably to code emphasis instruction, the rest of the literature review will be a synthesis of the research and reviews that demonstrated the efficacy of the code emphasis approach for many children. It will be followed by a review of the response to that research by the meaning emphasis camp.

What Have We Learned?

Context

Much of what is now known about the acquisition and instruction of reading has been discovered in the last 35 years. Some of the most important discoveries have been made within the last ten years. Research from two federal agencies, the National Academy of Sciences (NAS), under the direction of the U.S. Department of Education and the U.S. Department of Health and Human Services, and the National Institute of Child Health and Human Development (NICHD), under the auspices of the National Institute of Health, are largely responsible for recent discoveries and conclusions regarding the prevention and treatment of reading difficulties.

National Academy of Science Findings. The U.S. Department of Education and the U.S. Department of Health and Human Services asked the NAS to establish a committee to examine the prevention of reading difficulties. While not directly involved in actual research, this committee was charged with (1) conducting a study of the effectiveness of interventions for young children who are at risk of having problems learning to read; (2) translating the research findings into advice and guidance for parents, educators, publishers, and others involved in the care and instruction of the young; and (3) conveying this advice to the targeted audiences through a variety of publications, conferences, and other outreach activities. The committee reviewed research on normal reading development and instruction; on risk factors useful in identifying groups and individuals at risk of reading failure; and on prevention, intervention, and instructional approaches to ensuring optimal reading outcomes. The results of this review study can be found in Preventing Reading Difficulties in Young Children (Snow, Burns, & Griffin, 1998) and its more recent report of the subgroups of this

extensive review, Report of the National Reading Panel: Teaching Children to Read (National Reading Panel, 2000). It appeared at this writing that the publication and dissemination of the results of these studies was what caused the resurgence of code-based instruction due to the overwhelming findings that support balanced instruction including code-based instruction.

NICHD Studies. Reid Lyon was the director of the NICHD program that initiated research studies into the questions raised by the federal government. The research programs developed by this agency were rooted in scientific tradition and the scientific method with systematic, longitudinal, field-based investigations, cross-sectional studies, and laboratory-based experiments that are publicly verifiable and replicable. They integrated quantitative and qualitative methods to increase the richness, impact, and ecological validity of the data (Lyon, 1998b). It was the NICHD that declared our current reading situation a public health issue which is why the United States government chose to become involved to such an extent.

The NICHD has studied normal reading development and reading difficulties for 35 years. More than 10,000 children have been studied which has resulted in over 2,500 articles and 50 books that presented the results of ten large-scale longitudinal studies and more than 1,500 smaller scale experimental and cross-sectional studies. Many of the longitudinal research sites initiated studies in the early 1980s with kindergarten children before they began their reading instruction and studied the children over time—some children for fifteen years, some for five, some for three. At most research sites, multidisciplinary research teams studied cognitive, linguistic, neurological, genetic, and instructional factors related to early reading development and reading difficulties (Lyon, 1998b).

NICHD research studies were based at eleven research sites around the United States with 7,669 children and 1,012 teachers from 266 schools and 985 classrooms. The cumulative total dollars spent on these programs since 1965 is \$88 million. The studies were based on research showing how normal children learn to read and applying this research to the study of reading failure. The three basic questions these research studies tried to answer were: (1) How do children learn to read English (and other languages)? (2)

What skill deficits and environmental factors impede reading development? (3) For which children are which instructional approaches most beneficial, at which stages of reading development? Lyon (1998a) has written about this research:

The cumulative work of federally and privately funded researchers illuminates how children develop reading skills, why some children struggle to learn to read, and what can be done to help all readers reach proficiency. Although much remains to be learned, many findings have survived scrutiny, replication, and extension (p. 15).

While the findings of these studies did not constitute all or even most of the research conducted in recent years, numerous research studies and reviews of research have resulted in comparable results and consensus in many areas as will be seen later in this chapter. The NICHD studies, as well as others, were able to identify and replicate findings which pointed to at least four factors that hinder reading development among children irrespective of their socioeconomic level and ethnicity. These four factors were: (1) deficits in phoneme awareness and the development of the alphabetic principle and the accurate and fluent application of these skills to textual reading; (2) deficits in acquiring reading comprehension strategies and applying them to the reading of text; (3) development and maintenance of motivation to learn to read; and (4) inadequate preparation of teachers (Lyon, 1998b). The literature review included in this section will focus mainly on the first factor, reading skill development.

Not surprisingly, these two organizations, the NAS and the NICHD, were comprised of some of the most knowledgeable and renowned names in educational reading research. Unfortunately, the NICHD does not feel the NAS report does justice to the information that it (the NICHD) has uncovered in its thorough studies. The NAS, according to one source, did not use strong enough language in some of its recommendations about reading instruction (from an email list serve discussion with a member who had talked directly with the head of NIH, Duane Alexander). The literature review for this study does not, of course, only concern itself with the findings of these two organizations but has found very little that does not inherently agree with what the NICHD and NAS investigations uncovered. In addition, the rigorous research methods applied in NICHD studies make

them models by which to compare the results of previous, ongoing, or future studies. The next several sections will summarize some of the research that specifically supported code-emphasis instruction. (See Report of the National Reading Panel, [2000], for a complete report of the study results and reviews and a detailed description of the efforts made to analyze only those studies which met rigorous requirements).

A New Definition

One of the more significant consequences of the abundance of research in recent years has been the development of a new, inclusionary, definition of dyslexia. As explained earlier, the vagueness of earlier definitions was supported because it allowed a broader base from which to select those needing services. However, the negative consequences of inadequate definitions can be serious. Lyon (1995) explained that when the bases for assigning support services for children with reading problems were not clear or were not justified by research findings, numerous inequities in who does and who does not receive special education can result. Similarly, vague descriptions of the nature of the reading difficulty given in previous definitions failed to provide guidance about which component(s) of skilled reading were impaired and required remedial attention. This lack of emphasis on the relevance of particular language or reading skills necessary for reading mastery, in turn, contributed to inadequate training for most teachers and other professionals concerned with children's reading performance (Lyon & Moats, 1993; Moats, 1995a).

Lyon (1995) stated that in developing a new definition, several exigencies were decided upon:

- (1) It should be theory-driven and informative about the skills critical for becoming a skilled reader and that identify candidate sources of difficulty for readers;
- (2) It must be supported by a substantial body of convergent research and clinical information;
- (3) It should be based on studies of well-described samples of subjects avoiding confounding causes of reading disability common in referred samples;
- (4) It should be based on constructs that are relevant to the theory, are internally valid, and that can be measured directly and consistently by those doing the

measuring;

(5) It must be externally valid and useful and provide clear indications of how to identify whether a person is dyslexic, what to assess as predictors of later reading achievement in young children, and what to address in instruction or remediation (p. 8).

A new definition was constructed by The Orton Dyslexia Society Research Committee in 1994 in collaboration with leaders from the National Center for Learning Disabilities, with scientists from the National Institute of Child Health and Human Development, and with scientists and clinicians from universities in the United States and Canada. It stated:

Dyslexia is one of several distinct learning disabilities. It is a specific language-based disorder of constitutional origin characterized by difficulties in single word decoding, usually reflecting insufficient phonological processing. These difficulties in single word decoding are often unexpected in relation to age and other cognitive and academic abilities; they are not the result of generalized developmental disability or sensory impairment, dyslexia is manifest by variable difficulty with different forms of language, often including, in addition to problems with reading, a conspicuous problem with acquiring proficiency in writing and spelling (The Orton Dyslexia Society Research Committee, April, 1994).

The new definition was a working definition. It did not pretend to be the final word on what the nature of reading disability or dyslexia was (for a point-by-point explication of this new definition see Lyon, 1995, p. 10-18). Future research may reveal additional processes and deficits, if they exist, in the areas of temporal processing, semantic knowledge, grammatical and derivational morphology, and syntactic usage. As future findings emerge, the definition relayed here will be revised by reading experts to reflect the state of the science. A noteworthy aspect of this definition, and what set it apart from previous definitions, was the emphasis on single word decoding and its concomitant skill, phonological processing. The importance of these two skills in learning to read was punctuated throughout the literature and it was the recognition of the significance of these

two skills that turned the reading debate upside down.

Additional Battlegrounds

In addition to speculating about the definition and specific nature of a reading disability has been the rivalry between the two factions discussed earlier, code-emphasis (phonics) and meaning-emphasis (whole language), that cannot agree upon the way in which reading skill is acquired and should be taught. This debate has spurred much dialogue and research regarding a number of areas that have been different enough to appear to be mutually exclusive. The areas of contention fall into two categories: (1) the nature of reading acquisition and development and (2) the instruction of reading itself. Disputes over reading acquisition theories and resultant reading instruction have fostered research in educational practice regarding several major areas.

Regarding reading acquisition theory, the four areas of contention involved issues about the (1) innate or developmental nature of reading, (2) whether strengths or weaknesses should be the focus of instruction, (3) the effectiveness of ability grouping as opposed to inclusion, and (4) the value of direct instruction over discovery models. Questions about specific reading instruction methods have revolved around the topics of (1) meaning or decoding as the aim of beginning reading instruction, (2) whether to focus on whole words or their parts, (3) the use of context or decoding as the best way to recognize words, (4) deciding between implicit and explicit instruction of sound-symbol relationships, (5) the attention given to strategies or to skills in reading, and (6) the type of literature used—decodable or authentic. In this review, these ten areas will be discussed, some at length, others in passing.

While several of these themes seem very similar, reading experts have given voice to the many, varied ways these concepts differ. Depending upon which philosophy is adhered to, reading instruction in the classroom and teacher education in colleges would be very dissimilar. The scientific answers to these questions could change much of the classroom instruction in reading we see today. As challenging as these questions may be, studies conducted in the last several years have clarified much of this controversy with empirical research. The results of this research comprise the next section and will cover information

on the areas mentioned above. The purpose of covering this ground was to establish a rationale and justification, based on sound research practices, for the nature of the intervention study to be conducted.

Phonological Processing

Research evidence strongly indicated that dyslexia represents a disorder of language, and, more specifically, an impairment in phonological processing ability (Lyon, 1995). Stanovich (1990) declared that the “specification for the role of phonological processing in the earliest stages of reading acquisition is one of the more notable scientific success stories of the last decade” (p. 83). Phonological processing can be described as language sensitivity and proficiency at the level of syllable and speech sound processing. A phoneme is the smallest unit of discernible sound and our apprehension of these segments within running speech is made possible by our ability to process phonological information.

The term phonological processing has been conceptualized as encompassing at least three different components or skills: phonological awareness, phonological recoding in lexical access, and phonetic recoding in working memory. For comprehensive reviews of these features see Adams (1990), Torgesen (1996), Wagner (1996), and Wagner and Torgesen (1987). Phonological awareness is the recognition that spoken words are composed of phonemes. It can be assessed by asking the child or adult to rhyme or perform phoneme deletion tasks (e.g., say boat without the /b/ sound). The ability to access phonological information rapidly from a lexical store is assessed typically by tasks requiring rapid retrieval and naming of objects, letters, and colors. Phonetic recoding in working memory is usually assessed by observing performance on digit span, word span, and sentence repetition tasks. Phonological deficits may influence other linguistic skills: reading deficits frequently co-occur with deficiencies in word recognition skills, spelling, and written expression (Lyon, 1995).

Of these three major phonological processing skills, it was phonological awareness that appeared to be the most deficient linguistic skill in disabled readers.

Phonological awareness, which has also been termed phonemic awareness, phonological sensitivity, or phonemic segmentation, probably has been the most intensively

studied of the phonological processes related to reading acquisition. Phonological awareness is more than knowing the sounds that letters make, or phonics; it is a general appreciation of the sounds of speech as distinct from their meaning. Phonological awareness is a skill or ability that actually requires no knowledge of the alphabet or reading at all, yet it has been determined to be the single most important predictor of later reading achievement in young children (Adams, 1990; Blachman, 1984; Bradley & Bryant, 1983; Liberman, Shankweiler, Fischer, & Carter, 1974; Lundberg, Olofsson, & Wall, 1980; Vellutino & Scanlon, 1987; Wolf, 1984). For example, Bradley and Bryant (1983), performed a training study in which subjects were taught phonemic segmentation over a two-year period while they were learning to read. They found that experimental subjects were ahead of controls both in reading and in spelling at the end of two years. Training that included alphabet letters was the most effective.

Understanding of the link between the sounds of speech (phonemes) and the signs of print (letters) is the basic task facing the beginning reader and writer (Bryant, Bradley, Maclean, & Crossland, 1989; Liberman, 1971; Liberman & Shankweiler, 1985; Perfetti, 1991; Rozin & Gleitman, 1977). Because of the physical and psychological nature of phonemes as well as the nature of human attention, few children acquire phonemic awareness spontaneously. There is evidence that (1) some individuals do not develop this understanding without intervention (Ball & Blachman, 1991), (2) heightening phoneme awareness may help prevent some children from experiencing early reading and spelling failure, (Ball & Blachman, 1991), and (3) these deficits have a neuropsychological basis (Hynd, & Semrud-Clikeman, 1989; Larsen, Holen, Lundberg, & Odegaard, 1989) and a strong genetic component (DeFries & Decker, 1982; DeFries, Fulker, & LaBuda, 1987; Olson, Forsberg, & Wise, 1994a; Olson, Wise, Conners, Rack, & Fulker, 1989; Wise, 1991).

When educators assess phoneme awareness skills (Yopp, 1995), they ask children to demonstrate knowledge of the sound structure of words without any letters or written words present. Questions asked of children may be: What sounds do you hear in the word dog? What word is left if the /b/ sound were taken away from boat? What word would you

have if you put these sounds /k/, /a/, /t/ together? Is there a /k/ in bike?

This ability, to think about words and language without thinking about the meaning, is essential, but not sufficient, for understanding the alphabetic principle or to learn phonics and being able to decode words easily. Phonics is essential, but not sufficient, for fluency in reading which, in turn, is essential but not sufficient for reading comprehension. Therefore, the underlying skill in all of reading seems to be this skill we now call phonological (or phonemic) awareness. We know that this skill, like most others, exists in children on a continuum with different aptitudes and experiences (Lyon, 1998b). Some find it easy to acquire this skill, others do not. Those with a multitude of preschool experiences with reading such as modeling, lap time reading, access to books, etc. have a much greater chance of acquiring this skill adequately than those whose early lives are deficient in these experiences. But even children with these experiences, those from educated families with plenty of resources, may not come by this skill without great effort and instruction, thus the genetic and aptitude components are witnessed as differing causes with similar relationships and remedies. In other words, reading difficulties can be found in any student of any intelligence from any background. The environmental and genetic causes of the difficulty do not differ in their effects.

The earliest reports regarding phoneme awareness and its relationship to reading was in 1963 by Zhurova (1963) and Elkonin (1963, 1973). Initially, the relationship of phonemic awareness and learning to read could not be determined as to whether it was a correlate, consequence, or determinant of reading ability (Cunningham, 1990). Studies have shown a statistical relationship between phoneme awareness skills and success in the beginning stages of reading and spelling in several languages including English, Swedish, Spanish, French, and Italian (see Liberman, Shankweiler, and Liberman [1989]). These studies have all supported the idea that phoneme awareness is predictive of success in beginning reading. Scanlon and Vellutino's (1997) study involving more than 1,000 children observed throughout kindergarten, specifically found that phonemic awareness was a more powerful predictor of early reading than reasoning ability, vocabulary knowledge, syntactic knowledge and other general aptitudes. Studies have also demonstrated that if

children were lacking in speech sound awareness they can be taught directly as a precursor and along with instruction in letter-sound relationships and will become better readers (Ball & Blachman, 1991; Bradley & Bryant, 1985; Cunningham, 1990; Lie, 1991; Lundberg, Frost, & Peterson, 1988).

In the last few years, the results of a large number of studies and reviews have strongly indicated, however, that the relationship is causal and that phonological coding deficits impair the acquisition of phonological skills such as phoneme segmentation, letter and word naming, letter-sound mapping, name retrieval, and verbal memory (Blachman, 1991; Catts, 1986; Gough & Tunmer, 1986; Kamhi, Catts, & Mauer, 1990; Liberman & Shankweiler, 1979; Lundberg, Olofsson, & Wall, 1980; Stanovich, 1993; Wagner & Torgesen, 1987). The most direct support for a causal relationship between phonological skills and reading ability comes from training studies demonstrating that direct instruction in phoneme segmentation and letter-sound mapping can improve word identification and spelling ability (Ball & Blachman, 1991; Blachman, Ball, Black, & Tangel, 1994; Bradley & Bryant, 1983; Byrne & Fielding-Barnsley, 1990, 1991; Foorman, Francis, Novy, & Liberman, 1991; Fox & Routh, 1980; Lundberg, Frost, & Petersen, 1988; Vellutino & Scanlon, 1987; Williams, 1980).

Deficiencies in phonological awareness may be the cause of at least one prevalent form of developmental dyslexia and this limited ability in phonemic segmentation and phonetic decoding may impose an upper limit on a child's ability to acquire word recognition skill (Vellutino & Scanlon, 1987). The failure to acquire rapid, context-free word identification skill appeared to be the most reliable indicator of reading disability, and it was assumed that the well-documented phonological awareness deficits of this population probably caused their word recognition failures (Lovett, 1992; Stanovich, 1986, 1991; Vellutino, 1979).

Phonological awareness is genetically determined (Pennington, 1995) but at the same time, it is modifiable through experience and instruction (Ball & Blachman, 1991; Bradley & Bryant, 1983; Byrne & Fielding-Barnsley, 1993; Cunningham, 1990; Lundberg, Frost & Peterson, 1988). Despite the strong genetic influence of these deficits, attempts to

remediate them were not discouraged (Olson, Forsberg, Wise, & Rack, 1994b) and it has been found that remediation also can be effective with older students (Alexander, Andersen, Heilman, Voeller, & Torgesen, 1991; IMSLEC, 2001; Pratt & Brady, 1988). According to one researcher, direct instruction in phonological awareness activities is helpful to all learners, even those with highly developed skills (Fielding-Barnsley, 1997).

There is a strong assumption that, with increasing age and reading/spelling experience, phonological awareness emerged spontaneously and continued to develop and become refined to an “adult” level for most individuals. But this does not occur for one third or more of the population (Lindamood, 1994). Teachers, especially, should have highly developed phonological skills and this lack in teacher education has been strongly indicated (Lindamood, 1994; Moats, 1995a; Moats & Lyon, 1993; Rath, 1994).

Single Word Decoding and Comprehension

Although reading is a meaning-driven activity, the key to meaning for proficient readers starts with the immediate and accurate recognition of a single written word. There is a wealth of research indicating that the major academic deficits of children with dyslexia are difficulties in decoding and reading single words in an accurate and fluent fashion (Beck & Juel, 1995; Olson et al. 1994b; Patterson, 1990; Stanovich, 1986, 1993). The new definition of dyslexia spoke directly to this difficulty. Relating information from a page of print to prior knowledge is exceedingly difficult to do if the text cannot be deciphered quickly, automatically, and effortlessly (for reviews see Olson et al., 1994a; Shankweiler & Liberman, 1989; Stanovich, 1990; Stanovich & Siegel, 1994; and Vellutino et al., 1994). In first grade, the ability to read separate words accurately is correlated .89 with total comprehension—in other words, at the beginning stages, word identification is the major task of learning to read (Vellutino et al., 1994).

Some children can learn to decode without being taught how—they seem to have a more or less natural ability, whether from experience or heredity, or both. However, many children have not learned good decoding skills because they were not taught how to decode. Whole language advocate Frank Smith rejected the utility of decoding as “a procedure as impossible in practice as it is untenable in theory” (Smith, 1973, p. 70). The concern among

the whole language ranks has been that concentrating on decoding creates readers who become so absorbed in the accurate reading of individual words that they will lose track of meaning. Studies have shown, however, that comprehension failed not because of over reliance on decoding, as whole language proponents saw it, but because decoding skill was not developed enough (Stanovich, 1994).

Lyon and Chhabra (1996), stated that this finding was “one of the most robust in the reading, cognitive, and developmental literatures.” They referred to fourteen different reviews and studies that have taken place in the United States, Great Britain, Canada, and New Zealand. Vellutino et al. (1994), in the United States, studied the relationships between pseudoword decoding, real word identification, and phonological coding ability. Using data from a large psychometric battery administered to young and older poor and normal readers, they carried out regression analyses along with group mean contrasts to evaluate the relative importance of given skills and abilities in learning to read. The data provided strong documentation that adequate facility in word identification was a prerequisite to adequate facility in reading comprehension and that, given the former, one’s ability to read was dependent on adequate language comprehension. Olson et al. (1994b) studied dyslexic and normal twins between eight and twenty years of age from 27 Colorado school districts. The intent of the study was to compare orthographic coding deficits to phonological decoding deficits in printed word recognition. They concluded that the phonological decoding deficits were more heritable than the orthographic deficits but emphasized that the high genetic influence on deficits in phonological skills should not discourage attempts to remediate these deficits.

Stanovich (1994) placed the substantial importance of word recognition vis-a-vis reading comprehension within the following context: “Reading for meaning [comprehension] is greatly hindered when children are having too much trouble with word recognition. When word recognition processes demand too much cognitive capacity, fewer cognitive resources are left to allocate to the higher-level process of text integration and comprehension” (p. 281). Furthermore, a decoding deficit has been related primarily to phonological processing skills, especially the ability to abstract and manipulate constituent

phonemes in words (Felton & Wood, 1989; Olson et al., 1994b; Shaywitz et al., 1991).

Phonics Instruction

Phonemic awareness was but one of the phonological processes that have been determined to cause or certainly to predict the level of eventual reading ability. As mentioned earlier, phonemic awareness alone was not sufficient to produce good readers. Studies show that phonemic awareness was more efficient and its effects prove much stronger when phoneme awareness training was linked with letter-sound associations (phonics) and merged with reading and spelling instruction (Ball & Blachman, 1991; Bradley & Bryant, 1983; Cunningham, 1989). However, children may not benefit from instruction in phonics until they are phonemically aware, because the sound-symbol mapping intrinsic in an alphabetic writing system may remain a mystery to them.

Children must realize that the segments of their own speech are represented by print before they can decode or spell reliably. In a study by Wise & Olson (1995), in which two groups of children were trained in either phonemic awareness with sound-symbol relationships or comprehension strategies, the results suggested that good reading programs should include instruction in phonological awareness, decoding, and comprehension, and should include opportunity for accurate practice reading in context: Both groups of children showed improvement in the reading strategies for which they were specifically trained but showed deficits in the areas for which they were not trained.

Bradley and Bryant (1983) performed a training study in which subjects were taught phonemic segmentation over a two-year period while they were learning to read. They found that experimental subjects were ahead of controls both in reading and in spelling at the end of two years. Training that included alphabet letters was the most effective. These findings suggested that the most effective phoneme awareness instruction included attention to the connections between the sound segments of speech and the written symbols that represent those sounds.

In another study, by Ball and Blachman (1991), ninety children were randomly assigned to one of three groups. The first group received training in segmenting words into phonemes, as well as training in correspondences between letter names and letter sounds.

The second group received only the training in letter names and letter sounds. The third group received no intervention. Results indicated that phoneme awareness instruction, combined with instruction connecting the phonemic segments to alphabet letters, significantly improved the early reading and spelling skills of the children in the first group in comparison to the other two groups.

Although these results seemed undebatable—that phonemic awareness and phonics training are effective reading instruction strategies—the solution still was not apparent because there was a continuing argument as to whether the phonics instruction that children received should be through an implicit (analytic) or explicit (synthetic) phonics approach. Implicit phonics was taught by introducing words with similar sounds in them and getting children to imply that the letters they are seeing are making those sounds. The sounds of the individual phonemes are not isolated from the words themselves. In explicit phonics, the sounds are isolated and taught directly: The 45 sounds of the English language are taught with the children learning which letters or groups of letters (phonograms) are most likely to make those sounds; or the reverse, the phonograms are presented and the children learn the sound or sounds for each phonogram.

Explicit phonics seemed to have the most support for providing better results for more children more rapidly (Adams, 1990; Ball & Blachman, 1991; Chall et al., 1983; Fielding-Barnsley, 1997; Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998; Foorman, Francis, Novy, & Liberman, 1991; Iversen & Tunmer, 1993; Lovett, Ransby, Hardwick, & Donaldson, 1989; Vellutino et al., 1996; Williams, 1980). In the Iversen and Tunmer study (1993), the very successful program, Reading Recovery, initiated by well-known reading expert, Marie Clay (1985), was modified to include explicit code instruction involving rime and onset patterns. The Reading Recovery program was characterized by sequential, repetitive, one-on-one tutoring with a highly trained teacher. It typically did not include explicit instruction in phonemic awareness or phonics. In this study, three matched groups of 32 children each were divided into a standard Reading Recovery group, a standard intervention group, and a modified Reading Recovery group where the children received explicit code instruction. The results indicated that although both Reading

Recovery groups achieved levels of reading performance required for discontinuation of the program, the modified Reading Recovery group reached these levels of performance much more quickly. Results further indicated that the children selected for Reading Recovery were particularly deficient in phonological processing skills and that their progress in the program was strongly related to the development of these skills. The difference between the two Reading Recovery groups was so unexpectedly large that the data was checked twice to make sure they were accurate, which they were.

The results of the Foorman et al., study (1998) showed advantages for reading instructional programs that emphasized explicit instruction in the alphabetic principle for at-risk children. First and second graders (N=285) receiving Title I services received one of three kinds of classroom reading programs: direct instruction in letter-sound correspondences, less direct instruction, and implicit instruction. Children receiving direct code instruction improved in word reading at a faster rate and had higher word-recognition skills than those receiving implicit code instruction. The results of this study were the instigation for dramatic reading reforms in Texas and California. However, the study has come under attack and great scrutiny. Protestations against this study (Taylor, 1998) due to its methodology and other components will be elaborated upon later.

Lindamood (1994) also advanced the claim of the importance of phonics with a description of something she called the phonemic awareness/comparator function (PhA/CF). She asserted PhA/CF was necessary for readers to be rapid, accurate decoders and spellers. PhA/CF is the ability to use the phoneme subunits that are the link between the three skills of spoken language, spelling, and reading. PhA/CF allows a reader or speller to process the number, identity and order of phonemes in syllables and words and is the basic issue in competence in the three language areas. For example, to self-correct a spelling of "sip" for /slip/, a reader should be able to specifically compare the segments of phonological structure represented in spelling with those of the intended word. It is an auditory-to-auditory comparison which allows the speller to detect the omission of the /l/. A more advanced demonstration of this skill can be observed when a writer can pick out which letter is missing in this word: specifically by saying each syllable out loud--spe- ci- fi- cal-

ly--and being able to detect that there is no vowel in the written word to correspond with the spoken syllable ci-. Hence, the writer knows where the word is misspelled (although not always knowing what letter or letters to use). When using a skilled PhA/CF, the sensory feedback must auditorily convert the letter symbols to syllables, and compare the number of syllables and the sound segments within the syllables with those of the intended word. Lindamood (1994) speculated that it is often assumed this was possible for any reader but it was something that should not be assumed. Instead, she claimed, children and adults need to have access to accurate explicit, as well as implicit, awareness of phonemes and the morphophonological structure of words.

In addition, there were advocates of the idea that it was the articulatory gesture rather than the speech sound which might ultimately prove to be the most basic mechanism that subserves phonological awareness and basic reading skill (Liberman, 1992). Visual Phonics (International Communication Learning Institute [ICLI], 1985), a program initially developed for deaf students but sometimes used in regular classrooms, was concerned with the aspect of language and reading by teaching hand motions and a set of symbols to correspond with the motions made by the various oral structures in producing phonemes.

Similarly, but even more fundamentally, Lindamood (1994) felt that instruction needed to go further than just an awareness of phonemes and sound-symbol relationships. Her attempts at remediation, called Auditory Discrimination in Depth (ADD) (Lindamood & Lindamood, 1975) have gone to an even more basic approach--a more kinesthetic approach--in that children are taught the exact process of articulation. Lindamood believed that the nature of phonemes, and by what processes they are perceived, may assist children in defining and treating some fundamental problems encountered in both spoken and written language. She asserted that research has not been as productive as it could be because, for the most part, symptoms of reading problems were being researched rather than causes, and the questions being asked were not basic and relevant enough.

Lindamood and Lindamood's method, ADD (Lindamood & Lindamood, 1975), consisted of describing, identifying, and naming various phoneme types with words that children can relate to such as quiet and noisy tip tappers /t, d/, (known in linguistic phonetics

as alveolar stops), quiet and noisy lip poppers /p, b/, (bilabial stops) and back scrapers /k, g/ (velar stops). It is her contention that children may need to understand the exact production of the sounds, the articulatory gestures (made with teeth, tongue, etc.), in order to be able to control them in their decoding and reading.

Stetson (1951) was a possible impetus for these ideas. He noted that the study of phonemes should not be separated from the oral-motor movements that produce them because the motor activity involved is what allows phoneme segments to be verified. He explained that “speech is rather a set of movements made audible than a set of sounds produced by movements” (p. 31). For whole language proponents who do not want to break a word down any further than its meaning, this is decomposition at its finest. However, the verdict is still out as to the necessity or significance of the approaches in learning to read where children are given the explicit information about how and where each sound is articulated (Wise & Olson, 1995).

The significance of the following quote is not so much its content as the date it was written:

The question of instruction in phonics has aroused a lot of controversy. Some educators have held to the proposition that phonetic training is not only futile and wasteful but also harmful to the best interests of a reading program. Others believe that since the child must have some means of attacking strange words, instruction in phonics is imperative. There have been disputes also relative to the amount of phonics to be taught, the time when the teaching should take place and the methods to be used. In fact, the writer knows of no problem around which more disputes have centered (McKee, 1934).

This debate truly has been going on too long. Since the publication of Becoming a Nation of Readers (Anderson et al., 1985) many educators have viewed phonics instruction as one of the essential ingredients in reading instruction. However, not all educators are in agreement with this. Even for those that are phonics advocates, there are still issues to be resolved, but the issues are specific ones of just how it should be done—the timing, the extent, the order of instruction.

Within the confines of the whole language/phonics debate, it is obvious that phonics is important. With many questions answered but still much to be learned, what has become apparent is that some children need some kind of direct instruction in phonological processing and the alphabetic principle in order to reach their full potential as readers and they should not have to fail to learn to read by another method before these kinds of skills are given to them. Due to the results of research regarding the use of implicit or explicit phonics instruction, explicit phonics instruction was determined the best method for remediating reading difficulties for this study.

As suggested by Stanovich (1986), we may actually be initiating “a causal chain of escalating negative side effects” (p. 364) if we failed to provide early phoneme awareness training to children with poor segmentation skills. He predicted that students who quickly developed efficient decoding processes would find reading enjoyable because they could concentrate on meaning. They would read more in school and reading would become a self-chosen activity. This additional exposure and practice would further develop reading abilities as well as syntactic knowledge, facilitate vocabulary growth, and broaden the general knowledge base which facilitates the reading of more difficult and interesting texts. Conversely, he said, when reading development was slow there was less involvement in reading-related activities. This would result in a lack of exposure and practice which causes further delays in the development of automaticity and speed of word recognition. Due to this lack of fluency, reading for meaning would be hindered which multiplies unrewarding reading experiences to create an attitude of avoidance or tolerance towards reading with little cognitive involvement. These cumulative experiences could rapidly precipitate negative emotional effects which further hinders achievement.

A frightening manifestation of the differences in children with these varying experiences was confirmed when numbers of words read per year was compared. A child reading at the 98th percentile in his or her class, at the sixth grade, has averaged nine million words per year while a child reading at the 2nd percentile in the sixth grade is estimated as reading only about 8,000 words per year. This difference reaches magnificent proportions when it is calculated that it would take this slow reader, reading at his or her present rate,

591 years to read as many words as the top reader has already read (Nagy, Anderson, & Herman, 1987). What knowledge, experience, vocabulary development, and enjoyment have been missed by the poor soul at the bottom?

Reading Acquisition—Innate or Developmental

At the heart of the reading debate was not just the methods used to teach reading. The philosophy and theory of reading development also was at odds with one or the other side of the controversy. Probably the most basic of the debated issues in reading was whether reading was acquired naturally, as our spoken language is, or if it was developmental and acquired in stages that must, often, be taught directly. While there were a number of reading authorities who have written about the developmental nature of reading and about various stages a reader goes through in reading acquisition, there also were those that believed that reading was not developmental but an innate process that was learned through immersion in good literature.

Meaning-emphasis advocates believed that readers learned to read by reading: Readers can bypass the skill level of reading attainment by jumping right to being a proficient reader. Frank Smith (1992), one of the whole language originators, proclaimed that “learning is continuous, spontaneous, and effortless, requiring no particular attention, conscious motivation, or specific reinforcement” (p. 432).

The main thrust for whole language purists was to run a reading and writing activity program since they believed children teach themselves by pursuing these activities. The fact that many children can and do teach themselves to read in a whole language environment continued to bolster the idea that it was possible. Success in a whole language classroom required retention of words and natural acquisition of letter-sound relationships in order to work (Mather, 1992), but many children have difficulty with these processes. They are not successful in whole language programs for reasons that become apparent when the stage theory of reading development is considered.

As stated earlier, the variation in reading ability was best conceptualized as being part of a normal continuum with a proportion of the population being able to learn to read easily, a proportion for whom it is very difficult, with the rest having varying degrees of

success. This ability appears to depend in large part on phonological processing abilities which may be genetically or environmentally derived and are also part of this normal continuum. Furthermore, it was suspected that the continua are correlative, with phonological processing aptitude determining placement on the reading ability curve. For many of those who have difficulty learning to read, the key factor, phonemic awareness and letter-sound relationships, may not be presented with enough direct instruction, intensity, and practice to allow some children to be successful. Although the January 1987 Reading Research Quarterly held estimates that about one of five children (20%) attending U.S. elementary and secondary schools fails to achieve functional literacy (Stedman & Kaestle, 1987), research has demonstrated that reading disability can be prevented in all but 1-3% of children through well-designed early instruction (Vellutino et al., 1996).

The stage theories of reading and spelling development, whether they be Chall's (1983), Ehri's (1987) or Frith's (1986), proposed that all children follow similar phases in learning to read and spell, albeit at different rates. This development depends on genetic predisposition, experience prior to schooling, and in-school instruction. In Pressley and Rankin's (1994) review of literature and preliminary study findings, they declared that "the time has passed when linguists or other biologically-oriented scholars believe that literacy is an inevitable consequence of immersion in a literate world filled with high quality literate activities" (p. 161). It stands to reason that if reading were a naturally-acquired skill, all languages would have a written script and all people would be literate.

Reading development stages generally consist of the prereading (Stage 0—Chall), visual-cue word recognition (Ehri, 1987), or logographic stage (Frith, 1986), where children recognize whole words as symbols in a particular context (such as a McDonald's sign or a favorite cereal). All three authors agreed children then pass through a decoding stage and eventually to an automatic word-recognition or fluent reading stage before coming to a proficient level of comprehension during reading. Many authorities believed there was no way to bypass the phonological word-recognition stage of reading (Adams & Bruck, 1995; Beck & Juel, 1995) although not all children required direct instruction in phonics to acquire proficiency in this stage (Lyon, 1998b). However, it was the belief of many experts

that an attempt to achieve proficiency in these stages without some kind of direct instruction may be the cause of many of the reading difficulties seen in young children (Adams & Bruck, 1995; Beck & Juel, 1995). Research has demonstrated that most children with reading impairments can acquire at least age-level reading skills if they received early and labor-intensive instruction to correct their deficiencies.

A study by Vellutino et al. (1996) suggested that the majority of children who might be diagnosed as “reading disabled” are actually impaired by experiential and instructional deficits rather than basic cognitive deficits. In this study, 1407 kindergarten children were rated on their progress in reading, writing, spelling, and math. Approximately 190 were given the lowest rating and 90% of those (N=171) participated in the next phase of the study. As first graders, these children were provided with daily tutoring in basic skills including PA and phonics and then assessed on various phonological processing skills, as well as math and other cognitive skills, and compared to normal readers. Most of the tutored children became at least average-level readers in two (if not one) semesters of remediation. In comparing the “reading disabled” to the normal groups, they found that the best and worst achieving tutored groups, as well as the worst achieving and normal reader groups, differed statistically on measures of phonological skills, but not on measures of semantic, syntactic, and visual skills. Whereas 15% of the children initially were considered “disabled readers,” after tutoring, only 1-3% still fell in that category scoring below the 15th percentile on a composite measure of reading ability. One of the final outcomes of this study was the caution that “a diagnosis of specific reading disability in the absence of early and labor-intensive remedial reading that has been tailored to the child’s individual needs, is, at best, a hazardous and dubious enterprise” (p. 632). Instructional techniques can make the difference between being a poor or normal reader for those who have difficulty learning to read and those children who may require more explicit instruction can be pinpointed early on through PA testing in order to prevent them from falling behind.

Although many studies looked at beginning reading skill instruction, development, or remediation, it must be remembered that there is more to reading than decoding and simple comprehension. Chall et al.’s. (1983) reading acquisition stages (1983) continued

beyond the automaticity or fluency level also to include stages of reading that demonstrate the use of high level cognitive processes such as the ability to accept different viewpoints as well as being able to synthesize and create new information based on what has been read independently. These stages, according to Chall, were not attained until high school and college. The fact that most reading instruction ends in the sixth grade classroom where students were just beginning (if they were progressing normally) to enter these last stages is a criticism of our education system. For those unlucky enough to have a disability in reading or are merely behind, there are few, if any, chances to catch up or attain the level of proficiency required for more advanced studies.

Reading, unlike spoken language, has been a part of the human experience for a relatively short time. It is not conceivable that we have attained the ability at this early stage in our existence to acquire a complex task such as reading as naturally as we now acquire speech. In time, this may be a possibility. As there are now children who do learn to read with little or no instruction (they somehow seem to teach themselves) it is plausible that this ability could some day be as natural as learning to speak. Until that time, however, it appears that we have no choice but to teach children to read and that this instruction should pay close attention to the developmental nature of reading while initially focusing on phonemic awareness and phonics instruction.

What Do "They" Think About It?

Many, but not all, of the aforementioned studies and reviews were a result of the NICHD and its work. The NICHD studies, however, along with others that support a basic skills instruction approach to reading including phonemic awareness and explicit phonics, have come under severe scrutiny and attack. The most vocal of these critics were Ken Goodman (1998), Steve Krashen (1993, 1996, 1999), Jeff McQuillan (1998), Denny Taylor (19998) and Constance Weaver (1998). Even though many phonics proponents felt they could incorporate code emphasis activities into a meaning emphasis, Goodman and others believed they must defend their stance that reading instruction should not be skills-based with learning becoming a part-to-whole process. Much of the rhetoric in this defense, however, goes way beyond the bounds of reading instruction. Indictments of racism,

classism, and sexism, of promoting undemocratic systems and taking away teacher power and voice abound.

There is some validity to the criticism: As a result of some of the NICHD studies, entire states, such as California and Texas, have rebounded by focusing exclusively on phonemic awareness and phonics instruction with a number of the researchers tending to profit—they were authors of one of the reading programs that was adopted for the entire state of California (Taylor, 1998). If reading instruction as a result of the NICHD studies turned away entirely from whole language approaches and became a phonics-first, phonics-only format as the above-mentioned detractors claimed it would, and if the only reasons for these studies was personal profit, the hue and cry from these opponents of the NICHD work would be understandable and logical. A closer look at the critics' views should put the entire reaction into perspective.

Probably the most caustic, radical piece of writing that demonstrated the whole language rebuttal to the NICHD studies can be found in Taylor's (1998), Beginning to Read and the Spin Doctors of Science. In this lengthy treatise, Taylor focused almost exclusively on one particular NICHD study by Foorman et al., (1998). Taylor found fault with almost every aspect of the study from its methodology to its conclusions and also called attention to the fact that the results of the study were made public long before it was published and peer reviewed in a reputable journal. True, one of the by-products of the study was that California used it as the impetus for the adoption of a reading program, Open Court Reading (1995), which Foorman and other NICHD researchers authored. This reading program was used in the Foorman study with the materials and teacher training provided to her by the Open Court Reading company itself. However, the conclusions Foorman draws from her study: that systematic, explicit phonics had better results than either an embedded phonics or a whole language program, still remain and are not disputed by many, many other research studies. Taylor has, in fact, herself capitalized on this study by writing and selling a 400-page book to denounce it.

Less spectacularly, Krashen (1993, 1996, 1999) and McQuillan (1998) have each taken on the defense of whole language in similar ways. Without exactly decrying the

results of NICHD studies, they instead called for other remedies. McQuillan (1998) chose a few, flawed studies to support an anti-phonics stance claiming that, in reality, there has been no decline in reading achievement. He detested the time and money spent on the “Great Debate” over whole language and phonics-based approaches and instead called for more access to books and reading materials asserting that this was the best way to explain large-scale differences in reading achievement. California, the original focal point for most of the whole language reactions, has turned its support to the Open Court Reading systematic phonics program, but, claimed McQuillan, it has one of the worst public library systems in the United States, and, he believed, that was where the money and effort should go.

Krashen (1993, 1996, 1999) too, believed that access to books as well as free voluntary reading time, not direct instruction of reading or spelling, were the critical components in any attempt to accelerate reading scores. His contention was that as long as whole language consisted of real reading for meaning and that it is “providing children with interesting texts and helping them understand those texts” (p. 26), no skills-based program has been found to achieve better results. He charged that too often “whole language” programs were set up against skills-based programs when the classes labeled whole language did not necessarily do more real reading than children in traditional or basal classes. Krashen’s arguments were sound. Even the most devout phonics proponent cannot contradict the need for access to books and time spent reading. But, far too often, children sit in classrooms filled to the brim with wonderful book choices and they have no access to them independently—they must have books read to them because no one has taught them to read. Access to books is a fine goal, but children who can read them should be the priority. If Krashen had simply let his statistics and studies speak for themselves, he would have been better off. In a facetious attempt to call all phonemic awareness and phonics studies into question, he predicted the need for pre-natal phonemic awareness training and genetic engineering and screening for defective phonemic awareness in prospective parents (Krashen, 1999, pp. 89-95). This attempt at humor degraded all he has written that may have had value. Children and the parents of children who cannot read will not find this comical, nor will the teachers and researchers whose lives revolve around the frustrations of poor

reading.

Goodman (1998), himself, did not do his cause much good when he reacted almost violently in a book he edited, In Defense of Good Teaching. This book was a call to arms for whole language proponents to learn effective means of fighting back. It was here that Goodman and his contributors call phonics proponents champions of racism, classism, and fundamentalism. When Moats and Lyon (1993) concluded that children in urban settings were most in need of the intensive direct instruction the NICHD studies were calling for they were speaking to the lack of experience and advantage these children have had in the five years before they began their public education. Goodman classified this statement as racist presumably because many children in urban settings are black. However, the intent of Moats' and Lyon's statement and concern was for the socioeconomic experiences and conditions of these children, whatever color they may be.

According to Altwerger (1998), a contributor to Goodman's book, this was not a battle over reading instruction. She proclaimed phonics proponents represented the religious right "using language and literacy as a convenient and convincing cover and whole language as a trendy rallying cry for their true agenda: to discredit, control, and privatize American public schools" (Altwerger, p. 175). This phonics agenda further was accused of trying (1) to convince the mainstream public that public education is beyond salvation and unworthy of federal support, (2) to salvage only the wealthier school districts, (3) to dismantle the public school system and replace it with voucher systems, (4) to ensure the perpetuation and deepening of race and class divisions, and (5) to create a third-world class of American poor denied government support for adequate health care, housing, and education. She claimed that these goals would be achieved with lies, distortions, money, media, and political power (p. 178-179). This probably comes as a surprise to the people who merely wanted children to know that "d" says /d/.

The political and divisive nature of this debate took a twist when both sides credited the same author, Lisa Delpit, to defend their stance. As noted above, in the Goodman book (1998), whole language proponents asserted that a code-based or phonics approach to teaching reading is a racist, right-wing plot to keep children from learning. Their contention

was that this type of instruction was completely a drill-and-kill method that does not allow for critical thinking and analysis. This type of instruction, the anti-phonics people claim, maintained the status quo and did not provide the kind of learning necessary for, especially, minorities and low-income children to rise above their “adverse economic and political circumstances in which they are forced to live” (Taylor, 1998, p. 115).

In Taylor’s book, discussed earlier, Delpit’s articles were used to malign phonics approaches. In her two articles, Delpit (1986, 1988), an African-American university professor, does state that poor and minority students should not be subjected day after day to “isolated, meaningless, drilled ‘subskills’” (Delpit, 1986, p. 384) nor forced “to attend to hollow, inane, decontextualized subskills” (Delpit, 1988, p. 296). Because, she says: “a ‘skilled’ minority person who is not also capable of critical analysis becomes the trainable, low-level functionary of dominant society, simply the grease that keeps the institutions which orchestrate his or her oppression running smoothly” (Delpit, 1986, p. 384). Taken out of the context of the rest of Delpit’s remarks, it does appear that she is a champion of the whole language philosophy; however, a more thorough reading of her articles tells a different story and is the reason that references to her comments are often found in phonics proponents’ articles as well.

Educated and trained as a holistic, process-oriented, progressive teacher, Delpit was taught that people learned to write “not by being taught ‘skills’ and grammar but by ‘writing in meaningful contexts’” (Delpit, 1986, p. 380). She became involved in open classrooms, humanistic, non-traditional, non-repressive teaching experiences where white students excelled and black students still lagged behind. Her concern about this lag led her to talk with other black teachers and parents. What she soon discovered was that the “skills” she was taught to abhor were sometimes the only things that allowed black children to truly progress. These skills, to be sure, were to be taught within the context of critical and creative thinking but they must be taught explicitly and directly, Delpit contended, in order for the culture of power to be transferred to minorities and the poor who do not have the necessary home experiences to acquire them otherwise. She further stated that “a critical thinker who lacks the ‘skills’ demanded by employers and institutions of

higher learning can aspire to financial and social status only within the disenfranchised underworld” (Delpit, 1986, p. 384). Interestingly, as Delpit discussed these ideas with parents and African-American teachers, she heard accusations that process-oriented, fluency-rather-than-skills emphasis instruction was ‘just another one of those racist ploys to keep our kids out’ (Delpit, 1986, p. 382). African-American teachers, she found, saw the teaching of skills to be essential to their students’ survival and that many of the teachers themselves had been able to conquer the educational system only because they received the kind of instruction that their white progressive colleagues were denouncing. She further stated that “to provide schooling for everyone’s children that reflects liberal, middle-class values and aspirations is to ensure the maintenance of the status quo, to ensure that power, the culture of power, remains in the hands of those who already have it” (Delpit, 1988, p. 285). Delpit’s goal, then, was to insist that students be taught the codes needed to participate fully in the mainstream of American life by teachers who were authoritative and explicit in that instruction, not “guides by the side” as holistic, progressive educators tended to be. She felt that progressive, holistic education was failing “in large part because it was not able to come to terms with the concerns of poor and minority communities” (Delpit, 1986, p. 385). The fact that Delpit was seen by both sides as their advocate was to her credit as she believed in a balanced curriculum saying, “there is much to be gained from the interaction of the two orientations and that advocates of both approaches have something to say to each other” (Delpit, 1986, p. 384). However, her attention to skills, even within the context of critical and creative thinking, cannot be downplayed or disregarded.

Writing along the same lines, Maria de la Luz Reyes (1991), discussed the inability of process approaches such as featured in whole language classrooms to provide the needed emphases upon skills that bilingual learners may need. She referred to Delpit’s “culture of power” as well but did not misinterpret Delpit’s meaning. Her objection was that in whole language classrooms “little attention is given to examining the fit of [these processes] with different groups of students” (p. 167). She discussed a case study in which 10 bilingual students involved in the process approach to learning English with mini-lessons, writing conferences, peer conferences, literature logs and journals being the focus of the classes.

The findings of this study were that these students did not make any lasting improvement in using conventions in their writing and did not tend to correct form in their writing. Her suggestion was that process classrooms for second-language learners need to be redesigned with factors such as a balancing of tasks, more explicit instruction, creation of culturally relevant tasks, and scaffolding of tasks. With these adjustments, she felt, students of diverse backgrounds may be able to attain the literacy levels necessary for full participation in a technological society.

Delpit and Reyes, both minority professionals, have a unique perspective to share in the search for truth and understanding about education and literacy. Advocating for the learning disabled, Mather (1992) concurred with both Delpit and Reyes: “[These students] may learn to read in a whole language, mainstream classroom as long as appropriate, supplemental instruction is provided, a variety of instructional techniques are employed, and the intensity and duration of the services are based upon the individual’s needs” (p. 87).

Another whole language or meaning emphasis proponent is Constance Weaver. Interestingly, her writings, throughout the years, have changed in perspective and emphasis based on the research on phonemic awareness—becoming a hesitant proponent rather than an opponent of part-to-whole reading instruction, at least during the early years. In her book, Reading Process and Practice: From Sociopsycholinguistics to Whole Language, Weaver (1994) wrote that there were many reasons for not teaching phonics relationships intensively and systematically, much less for teaching actual phonics rules: “It’s not necessary. Just as they learn the patterns of oral language, so most children will unconsciously learn common phonics patterns, given ample opportunity to read environmental print and predictable and enjoyable materials” (p. 197). Whole language philosophy would be more likely to diagnose “over-reliance on phonics” when a student substituted words while reading or skipped or mumbled them (Weaver, p. 307). However, within four years of publishing Reading Process and Practice, a book edited by Weaver et al. (1998) called Reconsidering a Balanced Approach to Reading (1998), included two chapters which she contributed, demonstrating a restructuring of her thinking. In this book, many of the NICHD studies as well as others considered reliable and replicable are

thoroughly reviewed. Weaver herself concluded:

Research suggests, then, that our best plan may be to teach phonics and phonemic awareness in the context of reading and writing, to all children; provide tutoring within and/or outside the classroom for children who need more individualized and/or more direct help with letter/sound relationships and/or decoding; and probably to discontinue such help for children who have benefited little from a year's daily individualized tutoring, while increasing the emphasis on developing strategies for deriving meaning (p. 44).

In addition, Weaver (1998) exonerated the NICHD research from assertions by critics who claimed that NICHD research promulgated a strict phonics first-phonics only stance. Although NICHD studies supported explicit phonics instruction, they also included a major emphasis on reading and writing in environments that include good literature, reading for enjoyment, and other practices believed to facilitate the development of reading skills and literacy—a comprehensive approach to reading instruction (Adams, 1990). She outlined and quoted NICHD findings that promoted a balance of whole language and phonics and stated: “Obviously,these researchers make no such claim [to having a phonics first-phonics only advocacy] from their ongoing work” (p. 330).

One area that Weaver (1998) would not concede was the claim by NICHD researchers that phonemic awareness was the “cause” of good reading ability, as discussed earlier. She suggested “a reciprocal relationship between phonemic awareness, letter/sound knowledge, and reading itself: that each facilitates the other” (p. 336). Weaver’s final word on the phonics issue put everything into perspective. She reminded her readers that when teachers began teaching less phonics, they were trying to avoid or alleviate several problems such as spending too much time on phonics activities and not enough on reading. She proposed this challenge:

In the current thrust for teaching more phonics and phonemic awareness, or teaching it more intensively and systematically, we must avoid these errors of the past—and present. We must especially avoid making phonics a gatekeeper, a prerequisite to being allowed to read real books and participate in the world of literacy. Perhaps our

greatest challenge as literacy educators is to give children the specific instructional help they need and can benefit from, without keeping them from reading and writing whole, interesting texts because of their lack of phonics or word identification skills. (p. 365)

Beyond these vocal opponents, other reading professionals protested that the NICHD research addressed only children with reading problems. This interpretation also was inaccurate. Although NICHD studies did support explicit phonics instruction, they also included a major emphasis on reading and writing in environments that included good literature, reading for enjoyment, and other practices believed to facilitate the development of reading skills and literacy. In a summary of a lengthy treatise on reading assessments and remediations, Lyon (1995) concluded: "It is also critical that this instruction be contextualized within a rich meaning-based linguistic framework" (p. 20). Moreover, these studies were based on a large body of NICHD research on how children learn to read not just learning problems. Approximately 50 percent of the current NICHD research effort in reading was devoted to research on how language, reading, and reading-related skills emerged in proficient readers; the other 50 percent addressed factors that impede the acquisition of those skills (Fletcher & Lyon, 1998).

Summary of Literature Review

Phonemic awareness and phonics instruction seem to have permanently found their way into reading instruction and the argument is strong that there is a developmental nature to reading acquisition. However, there are still disputes among reading specialists about specific reading instruction methods such as: (1) Should the emphasis in beginning reading instruction be on meaning or decoding? (2) Should word recognition be taught through context or decoding? (3) Should sound-symbol correspondences be examined implicitly or explicitly? (4) Should decoding be taught at the syllable or phoneme level? (5) Should instruction be with authentic or decodable text?

In addition, general instructional methods also have been called to issue in the approach to reading instruction. These questions include: (1) Is the most effective instruction accomplished by focusing on strengths or weaknesses? (2) Are strategies or

skills what students require most? (3) Should instruction be through the inclusion model or in ability groups? and (4) Does direct instruction or a discovery model provide the most success? These theoretical, philosophical issues control what goes on in the classroom and the resulting reading instruction that is witnessed or received.

In recent years we have come much closer to actually being able to answer these questions regarding the inherent nature of reading development and the best way for reading to be instructed (see summary charts in Appendix B). The question still remains, however, as to whether what we have learned can be applied to students of any age to help overcome deficiencies brought about by disabilities or a lack of proper instruction.

This section of the literature review in no way predicts or proposes the demise of the whole language reading philosophy. Conversely, experts feel the knowledge uncovered in recent years about reading instruction may prolong the reign of whole language if the balance called for can be achieved. Many good things have come out of whole language: We know more about children's literature, administrators have moved away from excessive dependence on basals, there is more uninterrupted reading time allowed, there is a recognition of the importance of children's early spelling attempts, and teachers have become more aware of children's reading interests (Jones, 1995). When phonics instruction and instruction designed to stimulate phonemic awareness occurs now, it is different because of whole language. Children are learning that the goal of both phonics and comprehension instruction is to gain understanding of the text, rather than sounding out the words (Pressley & Rankin, 1994).

If teachers and administrators do not, however, make the necessary changes in instruction that research has suggested, what is good about whole language may be totally replaced. As Stanovich (1994) warned: "In holding to an irrationally extreme view on the role of phonics in reading education...whole language proponents threaten all of their legitimate accomplishments. Eventually...the weight of empirical evidence will fall on their heads" (p. 285). Reading instruction is not something to be administered according to whims; it must be based on evidence, not belief.

Justification of Intervention Methods Used for this Study

This section of the literature review will elaborate on and justify the methods used in this intervention study based on the knowledge gained from scientific studies and their results. The nature of the adolescent learner will be discussed in relation to developmental reading stages and the application of phonemic awareness and phonics instruction as well as fluency training that was implemented for the study will be outlined.

The Adolescent Learner and Reading Development

Children at the middle level have plenty of difficulties just being adolescents. Attempting to demonstrate maturity through sexual promiscuity and experimentation with drugs and alcohol, while still being concerned about not having recess, portrays the intensity of the extremes these students are undergoing during the ages of ten through about fourteen. Veteran teachers of middle level students usually learn to accept these wide variations in their students' behaviors and expectations and know how to teach and motivate students at this awkward stage. Students going through a typical adolescence have an arduous task trying to figure out the world and their place in it. Compounding these difficulties with also being unable to read well can create a whole new beast.

Middle level students whose skills in reading do not approximate their peers' can exhibit any number of dysfunctional behaviors, from acting out violently to becoming extremely apathetic. Of course, not all students with reading problems display these characteristics but, when present, a competent middle level teacher must know how to handle the student and the behavior. Students at this age finally realize that they are indeed in trouble and are not, as may have been promised, catching up. Some are desperate for approval and success of any kind. Most special education teachers work very hard with these students to ensure that their needs are accommodated and compensatory strategies, such as differentiated instruction and assessment, are provided.

A group of middle level underachievers often will look so uniform that the real reasons for the underachievement might be overlooked. As a middle level reading teacher for sixteen years, I have been aware of these curious similarities. ELL students and students of low socioeconomic status are most often found in these classrooms. One could assume

that poverty might be the common factor. Reading problems are known to be hereditary (Pennington, 1995); therefore, an adult with reading problems can produce children with reading problems and the adult, being a victim of this disability, may not have the skills to rise above a poverty level. English language learners may also be economically disadvantaged but, often, they are not truly disabled, they are simply conjoined with disabled students because their reading ability in their new language happens to be equivalent to a disabled reader's. While reading problems can be hereditary, many people with reading problems while they are young go on to be successful readers and attain high levels of competence and wealth in their chosen careers. Why, then, do older students with reading difficulties appear so consistently to be from low income families? My own personal observations as a teacher and tutor have been corroborated by Muehl and Forell (1973) who concluded that children of parents with professional backgrounds tended to receive help earlier and through means outside of the special education programs provided in public schools such as through tutoring or placement in expensive private schools and programs. Thus, money is a factor in the types of persistent reading problems seen at the secondary level but it is not the economic level itself that is the source of the problem as much as it is the reason that it still persists when the student is older. Timely, appropriate remediation can help all but 1-3% of the population learn to read at an average or above level (Vellutino et al., 1996), but students who are in poverty or even from lower middle income families often cannot afford the extra help needed if they are not provided it in school.

Many special education programs have provided inclusionary methods of teaching students where high needs students are taught alongside average and above average students with a special education teacher co-teaching with the regular education teacher. Since 1986, when the Regular Education Initiative (REI) calling for a return to mainstreaming and a reduction of pull-out services for students with mild handicaps was passed (Moats & Lyon, 1993), pullout programs for remediation became almost a thing of the past in many schools due to the fact that students were humiliated by it and it really did not work. The inclusion model provided role models for these needy students while also providing extra help through team teaching. While this model had its valid points, it often was unable to truly

furnish for struggling students the type of instruction necessary for them to advance beyond the level they begin each new year. Accommodations in the classroom will more often than not include reading aloud to all of the students because of the percentage that cannot read on their own. Therefore, this model may be detrimental to the average students who are not given the opportunity to independently practice reading material they are capable of reading. And for the struggling student, “accommodations and modifications are sorry substitutes for literacy” (Greene, 1998).

A typical middle level reading program for struggling students might consist of assigning materials at lower reading levels that have high interest for this age. Stories and books on tape with lots of teacher reading plus worksheets and hands-on projects and study skills also might be provided. Rarely does one find reading programs that begin from the beginning with phonemic awareness, phonics instruction, and fluency training for this age of student. The assumption has been that if a student has not learned to read, he or she probably will never learn, so compensatory strategies are employed. The following quote offered an explanation as to why instruction, perhaps, should begin at the beginning—even for middle level students:

These students struggle mightily with grade-level reading assignments and, because they are forced to read at frustration level most of the school day, their reading skill may improve little from year to year; in effect, they fall further behind their peers. Some of these students are labeled learning disabled and some slow learners, but the inescapable fact remains that they have the potential to learn if they receive appropriate instruction (Morris, Ervin, & Conrad, 1996, p. 375).

It is understandable why reading teachers and speech pathologists became reading strategy specialists. Reading disabled students do show a high degree of frustration when it comes to organization, planning, and self-regulatory strategies. If the assumption is that, by middle school, children who have not learned to read, will not learn to read, it might be best to teach strategies to help them use more efficiently the skills they do have. However, Meltzer (1994) pointed out that a strategy is considered a process that is consciously devised to achieve a particular goal, while a skill is unconscious, a more automatic process.

With this definition in mind, it becomes apparent that strategies may be useless if the underlying skill is not present. "Because of the energy that they have already expended on the application of basic skills, students with learning disabilities may avoid using strategies that require considerable effort" (p. 578). Strategy instruction without basic skill building may be a waste of everyone's time.

Appropriate instruction that remediates and improves a student's low skill level would seem to be necessary no matter what age the student. It is not, however, easy to structure after the elementary years. Middle level teachers are often not trained to teach lower level skills, and reading materials to deliver the needed instruction are often not geared to the interest levels of this age. When attempting to work with middle level students who are learning to read English, especially if English is their first language, all of these factors must be attended to in order to have a remote chance of success.

Assuming that reading is a developmental task with certain skills required in order to achieve more advanced levels (Chall et al., 1983), an intervention intended to assist middle level students to improve low reading skills would look different than a reading class provided as an inclusionary model or for average to high ability learners. Chall's stage theory would place any student reading below a first grade level, no matter how old they are, as being at Stage 0 where concepts of print and phonemic awareness would be necessary skills to learn. Students reading at a first or second grade level would require Stage 1 instruction in phonics and decoding. Students reading at a third grade level would likely possess phonemic awareness and decoding skills but may need some explicit instruction in advanced phonics such as with infrequent letter combinations (e. g., igh, ti, ough), syllable knowledge, and structural analysis, and the opportunity to read materials at very low levels to practice to automaticity in order to move past Stage 2 skills. Middle level students should be reading at least at Stage 3 where they are no longer learning to read but can read grade level materials independently with comprehension.

According to meaning-emphasis proponents, immersing students in good literature should be enough to facilitate learning to read. Obviously, for students at the middle level whose first language is English but have not acquired Stage 3 skills, much less Stage 1 or 2,

immersion did not work. In the district in which this study was conducted, the elementary reading program leaned heavily towards whole language. Reading scores dipped and then dropped dramatically since the inception of the meaning-emphasis program. Although it was not absolute, the culprit appeared to be the lack of code-emphasis instruction provided students. These are assumptions I made when developing the reading curriculum for my middle school, low-ability students.

As reported earlier, research now has shown that many students require direct, explicit instruction in Stage 1 and 2 skills in order to learn to read. Reading does not come easily for these students, they don't just learn how to read, they must be taught. For many, that means explicit PA and phonics instruction. Unfortunately, colleges and universities do not always supply the training for teachers to teach students these skills directly and explicitly (Lindamood, 1994; Moats, 1995a; Moats & Lyon, 1993; Rath, 1994). The meaning emphasis approaches are very much alive in these higher institutions which means that districts that have become aware of the need for a different kind of instruction are not finding people capable of furnishing it. As the author and principal investigator of this study, I attended workshops and conferences, read many books and articles and experimented in my classroom and in my home tutoring to be the purveyor of the instruction I deemed necessary. I did not learn these things in college education courses, nor have any of the other reading specialists in my district. I have had to teach myself almost everything I know about the kind of instruction needed when students do not learn easily. Reading research has preceded some of the techniques and activities I provided in the intervention, but much of what I have done was attempted by me first and then, often, validated by subsequent research that I read. I have been a reading teacher for almost 30 years but I did not know how to "teach" reading until I taught myself.

Ultimately, the goal of reading is, of course, comprehension. However, students who cannot decode and get the print off the page independently, cannot comprehend on their own either. Greene (1998), who developed a program called Language! to assist middle level students to read, observed that,

when all of the words readers never learned to decode in grades one to four are

added to all the textbook vocabulary words that don't preexist in readers' listening vocabularies, the percentage of unknown words teeters over the brink; the text [middle level students must read] now contains so many unknown words that there's no way to get the sense of the sentence (p. 76).

The intervention study described in this paper provided instruction based on the actual reading level of the students with reading development theory and research on best practices in reading instruction always in the forefront. Most of the materials and activities also could be used for first and second grade students. Materials written at those reading levels, that are of interest to middle level students, were not easily found. However, during the years that I have taught older students to read, I observed that students who have not been successful at learning to read enjoy anything, childish or not, as long as they can read it on their own. Children's books such as those written by Dr. Seuss and decodable texts as well as phonics worksheets are completed with great pleasure by students who have had to rely on someone else to read to them for years.

Intervention Methods Employed

The intervention reported in this study will be fully explained in the methods chapter. The following section will present a justification and documentation for the choices of instructional activities included in the study. I decided to focus on the following skills and training procedures: phonemic awareness, phonics instruction using a multisensory method, and reading fluency to enable comprehension. Measures of comprehension, word recognition, PA, spelling and ORF were collected and then analyzed for whole group, subgroup, and individual growth. It was believed that phonemic awareness and phonics instruction would promote growth in the learner's PA and spelling. Improving these skills would have an impact on fluency which would include improved word recognition ability and, ultimately, comprehension.

Phonemic Awareness. PA is a new enough concept that it was not discussed in Chall's reading acquisition model (1983); however, because PA typically does not include letters and real reading but instead attends to the sound structure of the language, it belongs in Stage 0 development and instruction. From previous years working with similarly

disabled students, it became apparent to me that many were still in need of PA training. Many could not detect rhymes, had difficulty segmenting words into sounds, and differentiating sounds, especially short vowel sounds. Bruck and Treiman (1992), found that children with dyslexia between the ages of eight and sixteen years not only showed deficits in PA when compared with good readers of the same age and reading level, but they also showed little if any development of PA as their reading skills increased. Others have pointed out that remediation using PA can be effective with older students (Alexander et al., 1991). Lindamood (1994) asserted that, for many people, phonological awareness or the phonemic awareness/comparator factor (PhA/CF) mentioned earlier, does not emerge developmentally into “adult” levels as has been assumed and it may be impossible to move up the developmental reading ladder without first possessing the rudiments such as phonemic awareness. Thus, PA was chosen as an initial instructional activity for the study. Exercises selected for this study came from Adams, Foorman, Lundberg, and Beeler’s (1998) Phonemic Awareness in Young Children. These activities will be described in more detail in the next chapter.

Multisensory Phonics Instruction. As reported earlier in the review of literature, phonemic awareness instruction, alone, is not a complete reading program. Although many children have learned to read without PA instruction and phonics, many students do not learn to read well if the explicit nature of the sound structure of our language is not made apparent to them. Simple phonics activities may be all that are necessary but years of experimentation and research have shown that explicit phonics instruction, along with PA training, is the most effective for many children in remediating reading problems. In fact, some researchers (e. g., Stanovich, 1986; Vellutino et al. 1996), conjectured that many children would not have reading problems if this kind of instruction were given as a matter of course and not just when a child has failed to learn to read by more holistic methods. Due to the fact that most of the students in this study were either English Language Learners or had been in the district under a meaning emphasis approach, it was assumed that phonics was not a part of their reading instruction prior to the seventh grade year. Therefore, phonics instruction was a significant aspect of the intervention provided for these

students. Phonics instruction can be either explicit (children learn the sounds of individual letters) or implicit (children imply the sounds based on observing several words with the same letters). The greatest success stories for children with reading problems, as related earlier in this chapter, have come from explicit instruction. Explicit instruction in the form of a multisensory program was chosen for the study.

Multisensory reading instruction has long been touted as being effective with disabled readers. Multisensory instruction received its name because all information was presented via sight, sound, voice, and kinesthetic means. In this way, any strong learning style was maximized while weak areas were strengthened. Multisensory instruction also employed explicit phonics instruction as a major component. Dr. Samuel T. Orton, a renowned neuropathologist who became known as the “Father of Dyslexia,” spent his career studying the functioning of the human brain in the learning of language and, in 1937, published a book, Reading, Writing and Speech Problems in Children in which his multisensory instruction approach was first presented. Many different multisensory programs have sprung out of Orton’s work with brain-damaged children and adults. His protege, Anna Gillingham, refined his one-on-one tutoring program to create a classroom program commonly known as Orton-Gillingham. Multisensory programs that fall under the Orton-Gillingham umbrella include the Slingerland Method (Slingerland, 1972), the Herman Approach (Herman, 1975), Project Read (Green & Enfield, 1970), and Spalding’s (1986) The Writing Road to Reading. It is the latter program, which I had used since 1992, that I chose for this intervention.

Henry and Rome (2001) stated that a multisensory program based on Orton-Gillingham

rests solidly on a foundation that emphasizes the structure of the English language and the importance of visual, auditory, and kinesthetic-tactile stimuli to help the dyslexic student learn and remember the language-elements for reading and spelling....The approach is multisensory, phonetic, structured, and sequential. The three main senses (visual, auditory, and kinesthetic) used in learning are trained simultaneously as students learn the graphemes and phonemes of English. Students

learn the individual phonetic elements of each letter or pattern by looking at it, saying its sound aloud, and tracing or writing the corresponding symbol. This process enables dyslexics to see the unit, hear the sound as it is pronounced, and feel the shape of the letter when it is written. The multisensory approach is an effective means of ensuring that students remember written language information in the absence of being able to recall the visual appearance of words or to rely on visual and auditory clues exclusively (p. 139).

The approach was structured and sequential. That is, phonetic elements were introduced in ascending order of difficulty (or frequency of use, as in the Spalding Method) with a new element added only after the previous elements had been learned. Students learned how to blend the symbols and their sounds for reading, how to separate and analyze the sounds, and how to write their symbols as they spell.

Orton-Gillingham methods were most often used with younger students but can also be used with older readers who had dyslexia or have manifested reading problems. Studies of these older readers are available but not prolific. Shaywitz (1998) and Wise and Olson (1995) both discussed the need for studies with older children already diagnosed with specific reading disabilities because, to date, few controlled studies have been reported. A few of these studies are illustrated here: Curtis and Longo (1999) at Boys Town, Nebraska developed a program for adolescents in remediation training that has had impressive results. However, the reading level of the students in their program rarely was below a third grade level and the interventions implemented were not geared for students below that level. Swanson, Simpson, and Kunkel (1992) demonstrated the effectiveness of remedial instruction using multisensory instruction for a population of juvenile delinquents. The treatment group not only made significantly greater growth in reading, but also had a significantly lower rate of recidivism than a comparison group. Arthaud (1998), investigated the effects of story mapping upon the oral reading fluency (ORF) of five adolescents with learning disabilities using an individual growth curve analysis.

The International Multisensory Structured Language Education Council (IMSLEC) (2001), has published a book of clinical studies, however, in which several of the studies

included middle level and older students. Many studies (some with controls, some without, some with large populations, some with small numbers, some in tutoring situations, some in classrooms), have demonstrated that middle level and older students can be successfully taught using multisensory techniques (see Clinical Studies of Multisensory Structured Language Education [2001] for the following fifteen studies: Bell; Davenport, Pickering, & McIntyre; Dooley & Caswell; Greene; Guyer, Banks, & Guyer; Herman; Hoerl & Koons; Killingbeck & Heiderson; Knight & Randell; Mahnkopf; Maskel & Felton; Roth & Roth; North & LaGrone; Reed & Day; and Wilson & O'Connor). While only a few of these studies have been published in refereed journals, the fact that so many studies have actually been conducted with older students that did improve in their reading skills is important. In most of the studies mentioned above, the improvement in the students' reading abilities was quite impressive. The Spalding Method (Spalding, 1986), the multisensory reading approach which was the basis of the intervention used for this study, was featured in the study by North and LaGrone and in the study by Hoerl and Koons.

North and LaGrone (2001), quantified student growth for over 500 special education students in grades 1 through 8 who were taught in resource rooms using the Spalding Method for one school year. Analyses of comprehension, written composition, and spelling scores were completed and recorded by grade level. For each variable, group averages by grade showed significant gains in five out of eight grade levels for comprehension, six out of eight grade levels for written composition and six out of eight grade levels for spelling.

Average gains for all three variables for all students were found to be statistically significant. Hoerl and Koons (2001), worked with 111 low-performing special education high school students using the Spalding Method in a longitudinal study. Students were in the program for one to five years with average grade level improvement in word identification, comprehension, and spelling being assessed each year. Throughout the five years, students left the program for various reasons with only four of the original 111 remaining all five years. Students demonstrated significant gains in each of the variables in all five years of the study.

In his book, Approaches to Beginning Reading, Aukerman (1971) described and reviewed the Spalding Method. One of the first places that the Spalding Method was tested under a controlled experiment was in a parochial school in Honolulu, Hawaii in 1952. The results were so remarkable that the method was recommended by the supervisory office for the 24 Catholic elementary schools of Hawaii. Aukerman visited several schools where the Spalding Method was being used and he reported on the results from 194 different classes taught by 194 different teachers in 22 different and widely scattered small and large public, private, and parochial schools in five different states. After preparing this report and documenting the achievement of the students, he determined that the incredible results of the children in these schools was due to the method, not the teachers or the types of children. The Spalding Method has been widely used in Louisiana, Texas, and, particularly, in Arizona which is now the home base for the program. Many Nebraska schools recently have begun employing the Spalding system. The methods section of this document will explicate the components of the Spalding program further. To supplement the regular Spalding program, additional phonics activities were utilized. Cunningham's (1995) Phonics They Use was a source for several of these exercises.

Spelling. A concomitant skill with phonemic awareness and phonics that demonstrates reading growth is spelling. Spelling instruction is an integral piece of the Spalding Method, also known as "The Writing Road to Reading" (Spalding, 1986). It is through spelling that students put all of the pieces of their PA skills such as phonemic segmentation, sequencing of sounds, and blending with the sound-symbol correspondences they have learned through explicit phonics. Spelling is one of the most difficult of the language arts skills but a child's spelling is a window to his or her understanding of many of the basic reading skills (Ehri, 1987; Moats, 1995b). The Spalding Method focused on spelling words through teaching words on the Ayres list, a list of over 1500 of the most frequently used words, and implemented a simple but enlightening marking system for students to analyze the spelling of each word (Spalding, 1986).

Fluency Training. The previously described instructional methods used in the intervention were necessary for students to achieve Stage 1, decoding, skills and transition to

Stage 2, confirmation and fluency, skills. Fluency is defined as “freedom from word-identification problems that might hinder comprehension in silent reading or the expression of ideas in oral reading” (Harris & Hodges, 1995, p. 85). Accuracy in reading alone is not enough, accurate word recognition must be completed rapidly for fluency to occur and only when readers can read the material with ease do they have opportunity to develop fluency (Nathan & Stanovich, 1991).

General comprehension strategies and rapid context-free word recognition appeared to be the processes that most clearly distinguished good from poor readers (Stanovich, 1980). While comprehension of reading is the goal, others have suggested that fluency gains were frequently accompanied by improvements in comprehension for elementary students (e.g., Bourassa, Levy, Dowin, & Casey, 1998; Boyer, 1993; Rasinski, 1990; Shapiro, 1989; Shinn, Good, Knutson, Tilly, & Collins, 1992; Sindelar, 1987). LaBerge and Samuels, (1974) proposed a model to explain the relationship between fluency and comprehension. In it, the allocation of attention to decoding and comprehension played a critical role. Because the capacity of attention was limited, readers who must focus their attention on decoding text have less attention available to direct toward understanding its meaning. Readers who decode text fluently have more capacity available for comprehension. In the current intervention, comprehension was measured only by pre- and posttest scores on the SDRT (Karlsen & Gardner, 1995). However, many studies have indicated that fluency is a strong indicator of comprehension. Although fluency does not “cause” or force comprehension it does appear to enable comprehension (Levy, Abello, & Lynsychuk, 1997) and is a prerequisite for good comprehension.

Critics (Mehrens & Clarizio, 1993) saw fluency as a limited sample of reading behavior and yet there was a growing body of research and reviews that supported the use of oral reading fluency as an accurate predictor of overall reading proficiency (Deno, 1985; Deno, Mirkin, & Chiang, 1982; Espin & Deno, 1993; Fuchs, Fuchs, & Maxwell, 1988; Jenkins & Jewell, 1993; Madelaine & Wheldall, 1999). In fact, the CBM measurement of oral reading fluency (ORF), which represents a combination of accuracy and rate, has been found to have a high correlation ($r=.60$ to $.83$) with comprehension testing results with all

kinds of students in all kinds of situations (Shinn, 1989). Deno (1985), declared CBM measurements were better than standardized tests, observations, and Informal Reading Inventories (IRIs) at indicating achievement. Baker, Plasencia-Peinado, and Lexcano-Lytle (1998), found that CBM measures may work as well as an overall measure of reading proficiency test for language-minority students as it does for native English-speaking students. Espin and Deno (1993) discovered that the oral reading fluency of 10th grade students predicted academic success for lower GPA students (it was not reliable for higher GPAs). Although decreasing correlations between CBM and standardized tests were observed at the fifth and sixth grade levels, Jenkins and Jewell (1993) concluded ORF may be a less sensitive measure of reading growth at the upper elementary level than at the lower elementary grades, due to a plateau of fluency experienced by skilled readers. This should not, however, deter the use of CBM with adolescents who are reading considerably below grade level. Besides this high correlation with comprehension, CBM assessments are easy, quick, inexpensive, and more useful for assessment and problem solving than standardized tests such as the SDRT (Shinn et al., 1992). More about CBM can be found in the next chapter.

Once the students in the intervention study had adequate PA and started to learn letter-sound correspondences through explicit phonics, they were given easy texts to read. The students in the intervention were divided within the first two weeks based on whether they were in Stage 1 (decoding) or Stage 2 (fluency) reading and provided with appropriate instruction and materials in these two groups for the rest of the year. The school district mandated that we assess students regularly using CBM on ORF. Monthly reading probes were given to determine the number of words each student read correctly on passages provided by the special education department and taken from the reading curriculum series used in the elementary reading program, *Invitations to Literacy*, (1993).

Students with Stage 2 reading skills were given materials and exercises to practice their Stage 1 decoding skills and were asked to pay special attention to the meaning of the stories they were reading so they could answer questions or write about what they read. Several methods were employed to assist students with fluency for Stage 2 reading

development. Researchers suggested various ways to foster more fluent reading, including assisted or unassisted rereading, teacher modeling, explicit instruction, and reading manageable and appropriate texts (Strecker, Roser, & Martinez, 1998; Rasinski, 1990). These techniques have received varying degrees of approval as a result of studies done where only one of the methods is taught and compared to others.

There is some doubt about the efficacy of one of these frequently used methods—rereading or repeated reading. In repeated reading, students reread the same passage until they achieve a goal of 85 words correct per minute or more (Samuels, 1979). The purpose of this procedure was to increase word recognition speed and thus be able to improve fluency. Fluency in turn, enabled better comprehension. Repeated reading has been compared to the practice and repetition it takes to be good at music or sports. Some researchers were critical of this method because repeated reading takes time away from covering a wider range of literature. Three advantages of nonrepetitive reading over repeated reading have been proposed: (1) Children acquire most new vocabulary through reading rather than direct instruction; thus, reading a wide range of materials exposed students to a larger number of unique words (Nagy et al. 1987); (2) a wider range of material read builds a knowledge base which, it has been established, has a positive impact on comprehension (Pearson, 1985); and (3) there is an additional opportunity for added exposure to a variety of literature genre (Irwin, 1991).

Homan, Klesius, and Hite (1993), reported equivalent benefits for repetitive and nonrepetitive methods as far as transfer effects to new reading. They also reported significant comprehension improvement in a 7-week period using a variety of the fluency methods. Herman (1985), insisted that only through repeated reading could quality components of oral reading, such as phrasing and intonation, be improved. Hasbrouck, Ihnot, and Rogers (1999), combined three methods for increasing reading fluency—hearing fluent reading modeled, repeated readings, and progress monitoring—developing a four-step strategy used with remedial and special education students. In addition to dramatic improvements in oral reading fluency, they reported another, unmeasured, outcome: “a noticeable increase in students’ self-esteem and confidence regarding their academic

capabilities and in their hope for future success in reading” (p. 34).

Fleisher (1979), on the other hand, reported no benefits to comprehension whether the passages tested for comprehension were trained or untrained. However, students in the current study read materials that were at grade level when the students’ ability was below grade level. Levy, Abello, and Lynsychuk (1997), repeated Fleisher’s design using passages that were below the reading level of the students and still found the results consistent with Fleisher’s. When Levy and his colleagues (1997), in a second experiment, had students train on all words in a passage rather than just some of the words, both improved reading speed and improved reading comprehension were observed.

Rather than boring students with tedious, unchanging repeated reading activities, students in the current study were engaged in many of these kinds of fluency exercises at one time or another. It was recommended that the passages used for fluency training and practice should be easy enough to be read with at least 85% to 95% accuracy (Adams, 1990; Dowhower, 1987; Guszak, 1992). Although low level materials suitable for young adolescent interests were difficult to find, I was able to provide short stories and non-fiction passages written at a second and third grade level with content intended for the middle school child (see Appendix C).

Context-free word recognition speed was a major determinant of individual differences in reading fluency (Frantantoni, 1999; Levy et al., 1997; Stanovich, 1980). In fact, word recognition and comprehension were so highly related (.98) that it may not be reasonable to consider them as distinct constructs (Shinn et al., 1992). So, in addition to connected text reading, students in the study were also engaged in exercises and friendly competitions to improve their ability to read words out of context using Fry’s 1000 most frequently used words taken from The Reading Teacher’s Book of Lists (Fry, Polk, and Fountoukulis, 1984). In this way, an integrated model of fluency training (Bourassa et al., 1998; Stanovich, 1980) was used with both top-down (meaning emphasis) and bottom-up (code emphasis) modes being an almost daily part of the training.

Assessment

Phonemic awareness (PA), multisensory phonics, and fluency training were the

essential ingredients in this intervention. To discover if these techniques and activities had an impact, a way to assess the students' total reading ability, word recognition, PA, spelling, and ORF was devised. Reading ability was measured through pre- posttests on the SDRT (Karlsen & Gardner, 1995) using the total reading score (TRS) given for each student. Pre-posttest scores on the SORT (Slosson, 1982) were used to assess context-free word recognition by counting the number of words read correctly (WRC). PA and spelling assessments were given to see if these skills improved as a result of the intervention. Ehri (1987) and Moats (1995b) claimed that much can be learned about a student's reading ability by using qualitative assessments of spelling. Monthly spelling tests were analyzed in two ways, (1) by the number of words spelled correctly (WSC) from the Morrison-McCall (Morrison & McCall, 1951) lists of spelling words and, (2) a qualitative-quantitative assessment calculating the percentage of letters of those same words with correct letter sequences (CLS) based on CBM methods. This procedure will be explained in more detail in the methods section. All five variables under investigation were analyzed using repeated measures t-tests on the average pre- and posttest scores.

Even the most powerful intervention may not demonstrate measurable effects if traditional pre- posttest designs are employed and only two measurement points are sampled because of issues associated with regression toward the mean. Ideally, measurement methodologies should be able to assess rate and degree of change over time, and to predict slope and intercept of individual growth curves with multiple measures to include type of intervention, individual difference variables, ecological variables, and the like (Lyon & Moats, 1997). This is why, in addition to more typical pre- posttest formats, WSC, CLS, and ORF were analyzed according to the IGC model explained in the next chapter with assessments being made in reading and spelling with CBMs or variations of these measurements. These measures were further studied using regression analyses for subgroups (gender, handicapping condition, and initial reading level) and individuals for their rate of growth in these variables. These last three variables were tested monthly and only student scores with at least five data points were used. These assessments will be further clarified in the next chapter.

Summary

As a result of many reading research studies and expert opinions, a purist whole language approach to beginning reading instruction did not appear to me to be in the best interests of many children (Clement, 1994; Delpit, 1986,1988; Mather, 1992; Pressley & Rankin, 1994; Westrich-Bond, 1993). Far too many people appear to be born with a limitation in that they cannot learn the phonological processing skills needed to become proficient readers without direct instruction. For some of those, even very intense, very methodical, instruction still may not be enough to make them much more than functionally literate but, at this point, we have children who are not functionally literate who could be with the proper instruction.

The purpose of this study was to determine if it were not too late for adolescents still struggling with reading acquisition to learn the necessary skills to become literate rather than to just be given coping strategies as is currently done in many American schools, was . According to experts, inclusion of training in phonological awareness in standard reading programs could make an important difference because of the persistence of phonological awareness deficits for older poor readers (Bruck & Treiman, 1992). In addition to training in phonological awareness, the present study included multisensory instruction in phonics, sight word training through various methods, and fluency training using books written at the current reading level, or lower, of the students involved in the study. As a result of providing the intervention, I hoped that I might be able to interrupt the negative chain of events described earlier (Stanovich, 1986) that can occur when children do not get the kind of instruction necessary for them to learn to read. I also anticipated that I would not only be able to determine if this kind of instruction benefited middle level students as a whole, but also to discern how well it worked, or did not work, for subgroups and individuals that received the same instruction.

CHAPTER III

METHOD SECTION

Introduction

This intervention study was preceded by many years of preparation and organization. As the author and principal investigator of the study, I developed or purchased materials over this time period, provided the on-the-job training of the individual instructors, and experimented with the eventual organization of two classrooms of thirty-eight students for the intervention. The intervention was part of an ongoing focus on beginning reading skills instruction for low ability students that I had been working on for several years in my classroom. I decided to study and analyze the results of this intervention during the 1999-2000 school year in order to complete my doctoral program. As much as was possible, the methods used in this intervention were based on the latest research regarding phonemic awareness, phonics instruction, and fluency training as explained in Chapter II. This specific instruction was designed to offset the non-skills-based instruction prevalent in my school district's elementary schools prior to the study. Although I prescribe to a balanced reading program, I felt that the student participants in the intervention did not need a "balanced" approach but a skills approach. Many of the students had been involved in a meaning emphasis philosophy of instruction for the previous six years and had not learned to read well. The purpose of this study was to see if these students would respond to direct instruction in basic reading skills as described in Stages 1 and 2 of Chall's reading acquisition theory (1983) and to determine an assessment and analysis procedure to know the extent of any individual or subgroup's response or lack thereof.

The method section of this paper will describe the intervention as it was implemented in a medium-sized, Midwestern city during the 1999-2000 school year. First, the students involved in the intervention will be described, as well as the faculty involved with the treatment group. Then, the intervention framework will be outlined and described. Next, the method of data collection and analysis will be discussed.

Participants

Criteria for Selection of Students

Seventh-grade students involved in the study were identified special education students and ELL students with some sharing both labels. The students were scheduled by school counselors on two separate middle level teams but were co-taught by myself and another reading teacher, two special education teachers and an ELL instructor. Consent forms in English and Spanish were distributed, signed, and returned by students and their parents at the beginning of the school year (see Appendix D). These students were selected based on scores from sixth grade testing and fell primarily below the twenty-fifth percentile on the SDRT (Karlsen & Gardner, 1995) and below the twenty-fifth percentile in CBM probes while reading a fourth grade passage. Thirty-eight students were initially selected to participate in the study. The data for only 25 students was used due to students moving away, transferring to alternative settings, or moving out of the program due to high scores. The intervention treatment, which lasted an entire school year, began with phonemic awareness training and explicit, direct instruction of phonics using the Spalding Method (Spalding, 1986) which I modified for use with seventh grade students, and was interspersed with various fluency and comprehension activities. These activities will be further described later in this chapter. Within the first two weeks of the school year, the students, from two seventh grade middle school teams in the same middle school, were divided into groups according to Stage 1 or Stage 2 reading abilities according to their placement on the SORT with students scoring at a first or second grade level being placed in the Stage 1 group and students with a high second or third grade level being placed in the Stage 2 group. These stages were described earlier in the literature review and have been established by Chall et al. (1983). (see Table 1 in Appendix E for detailed information about each student).

Teaching Personnel

Five teachers and several other adults were accountable for all students in the treatment group during daily 43-minute periods. As principal investigator of the study and a reading teacher, I was the initiator and curriculum provider for this classroom research intervention. I also was the primary teacher presenting information to the treatment group in

two classrooms during the same period of the day. The other teachers involved with the treatment group were two special education teachers, a middle level endorsed regular education teacher (replaced at semester by a substitute teacher due to maternity leave), an ELL teacher, and an ELL interpreter. An ELL student teacher, a parent volunteer, and a student bodyguard also were present at different times throughout the year. These individuals provided reinforcing activities for the students in the same classroom all year while I moved from one classroom to the other during the class period, providing direct instruction at two different levels--Stage One and Stage Two. The teachers received no additional training time in the method of explicit phonics that I used but became familiar with the method as the students were instructed during the year prior to the study as well as throughout the study year. However, the four main teachers from the two teams (myself and the other reading teacher and the two special education teachers) met weekly during common planning times to evaluate student progress and to plan for the following week's instruction. Planning time also was used to discuss the next phase of the instruction as the study progressed.

Description of Intervention Methods Used

During the course of a year, it is possible to provide numerous activities even when spending only 43 minutes a day with a group of students. Looking back over the lesson plans, it is interesting to see just how much was planned for this time period and how much preparation was needed in order to provide the many activities in which students were involved. Although a general design was attended to all year, various interruptions and spontaneous undertakings came up as would be expected with any group of students. Field trips, millennium celebrations, Read Across America activities, interdisciplinary units, and other team activities were also a part of the experiences for these students during their reading class period.

This intervention was not the direct result of poring over research studies just prior to submitting my proposal for the study to find the best practices. It was designed over many years based on reading, attending classes and workshops, experimenting in my classroom, tutoring, and sharing of ideas with other teachers. My teaching has changed

considerably throughout this time due to the learning and experiences that I have had. For example, I have become more aware of the necessity for explicit PA instruction, hands-on activities, and drill and repetition, as well as the need for students to be provided with more practice reading easy materials in order to apply the skills learned and achieve automaticity in word recognition.

Due to the fact that the intervention was going to take place all year, there was no one area that was more focused on than another, with the exception, perhaps, of explicit phonics instruction. The main program throughout the year consisted of phonemic awareness and phonics instruction, word recognition activities, spelling, comprehension, and fluency training. The length of time for each, and sometimes the materials used, were dependent upon the students' abilities and progress. For example, the Stage 2 group of students had higher spelling abilities than what had been planned so a new set of exercises was developed rather than using what was originally scheduled in order to meet their needs. A writing component also was a part of the weekly activities that were designed for students. Data were gathered from this segment of the instruction but was not included in any kind of analysis for this study. This was not a clinical study, but an authentic classroom setting where real students affected the plans and the outcomes and changes were made as necessary to accommodate them. The intent was simply to study and analyze the results of what went on in the classroom during a year's instruction. The hope was to see students improve in their abilities as a result of this set of developmentally appropriate activities in which they were engaged for a full year. The results of the intervention cannot, therefore, be directly attributed to any one activity but to the program as a whole which was designed to meet the developmental needs of the students. Another goal was to find a way to analyze and assess the results in order to see what kind of change was made and who responded or did not respond.

Classroom Structure

Students who have reached seventh grade and are reading four or more years below their grade level are at a distinct disadvantage and may have acquired multiple behavioral and emotional handicaps in addition to, and possibly as a result of, their academic failures.

Students whose first language is not English and also reading well below grade level in their new language need every possible advantage to increase their command of the English language. A special education model, which allowed for the team-teaching setup of regular education teachers with special education teachers, was employed for the treatment group in this study. It is doubtful that 38 low readers would benefit as much from the procedures established within the confines of this study if it were not for the team-teaching approach because so much small group and individualized attention is required. As a result, this study may be irreplicable without the use of the team-teaching approach unless student numbers were reduced.

The intervention treatment began with phonemic awareness training and explicit, direct instruction of phonics using the Spalding Method (Spalding, 1986) which I modified for use with seventh grade students. I designed a spelling book patterned after the Spalding format that all students used (see Appendix F for sample pages). Daily spelling words with their specialized markings, spelling rules and application pages, and a place to record answers to daily comprehension stories were included in this booklet. Other activities included games and exercises for spelling words, word recognition, oral reading and fluency practice, sentence dictation, short stories (sometimes timed) with comprehension questions, and computer programs that further emphasized these skills. The spelling, sentence dictation, and timed stories were a part of the Spalding system. Other activities that were included came from various books I had read and workshops and classes I attended over many years. At least three different activities were planned for each class period depending on the perceived needs of the students so there was always constant activity and no one activity ever got boring (for a list of materials used see Appendix C). A more detailed description of many of the activities the students were engaged in follows.

Phonemic Awareness (PA) Training

Phonemic awareness (PA) was taught only in the Stage 1 group. The Stage 2 students did have a need for this type of instruction. Students at Stage 1 reading, even at the seventh grade level, could be heard to ask if “window” and “shine” rhymed. Therefore, several PA activities were chosen to assist the students in developing their PA. Adams et

al.'s (1988) Phonemic Awareness in Young Children, was the source for most of the PA exercises. This book is a complete curriculum for phonemic awareness for kindergarten and first grade students. Although many of the suggested activities are not appropriate for seventh grade students, most can be adapted. It was feared that seventh grade students would think that phonemic awareness training would look too "babyish" but, in fact, they enjoyed it. Many of the students had great difficulty with some of the activities, initially, but as they became more proficient, they felt successful and that they had accomplished something significant.

For the first few weeks, students in the Stage 1 group were helped to develop their PA by working with concepts such as (1) rhyming (A cat wearing a ____ [hat]. A mouse that lives in a ____ [house]) and extended rhyming (The ship is loaded with cheese. [peas, fleas, trees, etc.]), (2) beginning, ending, and medial sounds (i.e., Distributing pictures and having students find pictures with sounds matching the model), and (3) building words with colored blocks representing each sound (so, slow, snow, stow; spy, pie, spice). For this last set of activities, students were given packets of colored squares and asked to arrange them according to the sounds they were hearing in dictated words. Each packet had three different colors which could represent different things depending on the activity. Typically, one color was for the vowel sound, one color for the consonant and, when silent e was introduced, another color for the silent "e". One square could represent more than one letter such as with digraphs (e. g., th, sh) and diphthongs (e. g., ow, oi). After several of the first phonograms were learned through the explicit phonics instruction, which was going on simultaneously, students were given dry erase marker boards to match the colored blocks with graphemes that they were hearing in the words. Finally, simple phonics worksheets were provided for the students. It became readily obvious that, even within the Stage 1 students, there were distinct differences in ability on these seemingly simple tasks.

Explicit Phonics Instruction

Explicit phonics instruction has been a missing component in reading instruction since the adoption of the whole language and literature-based reading philosophies. Only recently has it been proven that these philosophies are inadequate to teach some children

without the inclusion of explicit instruction (see Chapter II, Literature Review). It was the express purpose of this study to determine if older students who have not achieved grade level reading can benefit from reading instruction that included basic reading skills such as explicit phonics. It also must be noted that explicit phonics instruction may be essential but it is never sufficient for optimal reading achievement. Therefore, this study emphasized explicit phonics instruction within the context of a reading program that included spelling, writing, oral and silent reading, fluency training and comprehension, all with materials at the reading levels of the individual students. Students in the Stage 2 group were given stories that were high-interest, low-ability written at a second, third, and fourth grade level. Students in the Stage 1 group were not as fortunate as there were not age-appropriate materials available for the middle level child still at Stage 1. Instead, these students were given copies of children's books and easy, decodable stories to read. Most of the students were just happy to be able to read anything to care about the content or appearance of the material they were reading. Many of them wanted to take their stories home to read to younger siblings. However, after a bank of words was learned by the Stage 1 students and their decoding skills began to show improvement, age-appropriate stories written at a second grade level were read and enjoyed.

There was no pretense in this intervention of trying also to include what might be considered "great literature." All students in the treatment groups were mainstreamed in regular English classes or ELL classes as well as content area classes such as science and geography. I felt that they could get their literature exposure and critical thinking experiences in these classes. With instructional time limited to only 43 minutes a day, the intervention study was designed to provide the maximum amount of direct instruction and practice at the student's actual reading level as possible.

Stage 1 students met daily in my classroom while Stage 2 students met in the classroom of the reading teacher on the other seventh grade team. A special education teacher co-taught in both rooms and an ELL teacher also was in the Stage 1 classroom on a daily basis. I taught phonics to all students in both the Stage 1 and Stage 2 groups through direct instruction of explicit phonics as portrayed in the Writing Road to Reading method

established by Spalding (1986). Each group went at a pace that was comfortable for the majority of the students. I had previously employed this kind of instruction during the past eight years in middle level classrooms and home tutoring and adapted it according to the needs of my students. Using a modified Spalding reading method implemented for this study, I presented the explicit sounds for 70 phonograms which are groups of letters with individual sounds, e.g., *igh*, *ea*, *ou*, *wr*, *kn*, etc. (see Appendix F) in a multisensory approach which required that students see, hear, say, and write each phonogram and the subsequent spelling words. During the first few weeks of instruction, students were taught all the sounds that the first 54 phonograms make. Following near-perfect memorization of these phonograms by demonstrating that students could write the correct phonogram when the individual sound(s) and rules were presented, students were then introduced to a particular method of spelling which is one of the trademarks of the Spalding Method (Spalding, 1986).

In the Spalding Method, spelling is emphasized more than reading in the initial stages of instruction for the child. The premise was to go from the “known,” a word in the child’s vocabulary that he or she knows and understands, to the “unknown,” the spelling of that word. Students were given five new words each day. Each word was used in a sentence, then segmented into individual syllables and phonemes. Students then matched the sounds with the appropriate phonograms, and blended the sounds together to create the word orally. This is a scripted format particular to the Spalding Method. In addition, they learned spelling rules and a marking system to assist them in analyzing, not memorizing, the spelling of our most frequently used words. This system included using a red marking pencil on the words to (1) underline phonograms of more than two letters, (2) identify the number of the sound the phonogram is making in the word, (3) record any rule it might be following, (4) double underline any phonogram that is silent or not making its usual sound, and (5) bracket words that are introduced together because of similarities in spelling, meaning, pronunciation, etc. (see examples in Appendix F) Within a very short time, students were able to tell me exactly which markings went with each word. This system taught students to analyze, not memorize, the spelling of the words. The words used were

from the extended Ayres list included in the Spalding teacher's manual (Spalding, 1986). As new words were added each day, students practiced spelling and marking the week's previous words until, after 20 words were introduced and practiced, a quiz was given.

After the initial instruction of the first 54 phonograms, the instruction was altered depending on whether the students were at Stage 1 or Stage 2. For instance, Stage 2 students learned the first 54 phonograms weeks before the students in the other group. Each group's daily lessons were similar with the higher achieving group getting more difficult words, more challenging computer programs, dictation sentences, and comprehension stories, and learning the remaining 16 of the 70 phonograms in the Spalding program sooner than the Stage 1 students. Continued repetition of the first 54 phonograms was necessary for the Stage 1 students throughout the school year with the remaining 16 phonograms introduced towards the end of the first semester. By the second semester, Stage 2 students "outgrew" the Spalding approach to spelling. Exercises we called Vocabulary/Spelling/Comprehension (VCS) packets were devised for them. These packets included work with more difficult spelling words following certain patterns and rules, verb usage, contractions, etc., with vocabulary and writing exercises for those words. It also included comprehension stories and a place to write responses to independent reading the students did each week. The exercises came from various online sources and workbooks.

Supplemental Phonics Activities

For the Stage 1 group, supplemental phonics activities were employed in order to sharpen their skills and give additional practice. Rime/onset activities and games, build-a-word lessons, and practice with short vowel sounds are examples of other exercises provided for this group. Some of these activities were taken from Phonics They Use (Cunningham, 1995). Booklets, student letter cards, picture cards, and games for student use with these activities were created or purchased for the intervention.

Word Recognition Activities

Many activities were provided for students to help them with automatic word recognition. These activities helped students to apply their phonics knowledge without the help of context. Stage 1 students practiced reading and spelling words with similar spelling

patterns using packets that contained 50 to 60 words per page. The words used in the spelling portion of the daily activities were practiced by students in varying ways.

An approach to improving word recognition was used with a list of the 1000 most frequently used words found in The Reading Teacher's Book of Lists (Fry et al., 1984). Stage 1 and 2 students were given a packet of these 1000 words with 50 words per page in two columns. These exercises were used by small groups with a teacher or adult present who could inform the students when mistakes were made. The students practiced reading these words by reading as many words as possible in 15 seconds. The teacher would then ask the student to look again at any word missed, telling them, perhaps, what word they had said instead so they could examine the word for similarities. After all words on one page had been read by the group of students several times, a four- or five-minute time period was used in which the teacher said, "Find the word" and the student who found it first and read the number of the word and/or spelled it, received a token. Sometimes the instruction was varied asking students to find words based on spelling patterns, phonogram sounds, meaning, antonyms, etc. Students enjoyed the competition and many skills such as word attack, scanning, and even number naming were practiced.

Additional words chosen from the comprehension stories the students read were learned and practiced with exercises such as Word Bingo where students must classify words on their card based on categories such as numbers of syllables, meaning, phonogram content, etc. (see example in Appendix G). These activities took place before the reading was assigned to assist in word identification without the context of the story. Students were asked to predict what the story was going to be about after being presented with the "difficult" words in a Word Bingo activity.

Oral and Silent Reading and Fluency Training

Oral reading was a major component in the intervention study because of the research that points to automaticity of word recognition and ability to read fluently as being essential for comprehension (Bourassa et al., 1998; Boyer, 1993; Rasinski, 1990; Shapiro, 1989; Shinn et al., 1992; Sindelar, 1987; Stanovich, 1980). In the Stage 1 group, students initially read along as the teacher read a simple decodable story, children's story or easy,

high-interest story or paragraph (teacher modeling). Then they reread the story to a peer, read alone or with an available adult until they read each one three or four times. They were encouraged and allowed to seek out adults such as media specialists, secretaries, and custodial staff to listen to them read. These individuals then signed a form proving the student had completed the task. Eventually, most students could read the stories given to them on their own without teacher modeling.

In the Stage 2 group, fluency was fostered through timed readings where students started at the beginning of a story and read for a certain length of time noting how far they read by the end of the time period. They then started at the beginning again and read for the same length of time trying to read further than the previous time. High interest-low ability books and stories were available in double and triple copies and students chose materials to read to each other. Fluency also was encouraged and practiced by reading silently when doing timed readings as explained next in the comprehension section of this chapter.

Comprehension

In this study, comprehension was relegated to short stories and paragraphs with comprehension questions, rather than longer texts, simply because of the time and material constraints. When the Stage 1 group acquired a basic sight vocabulary and the ability to decode new words, McCall and Harby's (1980) Test Lessons in Primary Reading were read. These stories have ten Yes/No questions with discussion questions to accompany them. After the stories were read aloud by the teacher, students read the stories to themselves again and then answered the questions. Answers were discussed and then students volunteered to read the story again. Eventually, the students were able to read these stories on their own and then answered the questions as an independent or partner activity.

The Stage 2 group read comprehension stories with questions from the outset. All students in this group began with the Primary lessons described above. Eventually, this group was divided into an upper and lower group when it became apparent that there were major differences in student needs depending on whether they were reading at an upper or lower third grade level. These two groups were then given two different levels of comprehension stories and worked together with one of the two teachers in their classroom

on these stories. McCall-Crabbs Standardized Test Lessons in Reading (McCall & Crabbs, 1979) were used almost daily to practice comprehension by the Stage 2 group. When timed for three minutes, these stories (which are available in six levels of difficulty) gave a fairly accurate grade equivalent score for students based on how many questions were answered correctly in the time given. These exercises pushed students to read quickly, as well as for comprehension because both aspects were accentuated. Timed readings were employed every other time the stories were assigned. The spelling booklets described earlier were used to record answers and the grade equivalent the students achieved when they were timed was also charted. Stage 2 students also demonstrated comprehension through various projects assigned after independent reading. These projects included such things as creating plays; making booklets displaying settings, characters, and other story elements; making up quizzes to give to each other; and doing author research projects.

Writing, Dictation, and Conventions

Another consistent activity in both classrooms was work done in a packet I designed called "My Writing Notebook," which was used primarily during the second and third quarters. This notebook was developed in response to mandates for special education teachers to provide a weekly CBM sample of student writing. The CBM writing sample consisted of presenting a writing prompt, allowing one minute for the students to think about what they would write, and three minutes to write. After three minutes, the students had to stop or draw a line and then count the number of words written. They could finish their writing if they wished to. These samples then were scored according to CBM procedures with the number of words written, the number of words spelled correctly, and a correct writing sequence score which was determined by counting the number of words in a row without any spelling, punctuation, or grammar errors.

Spelling tests and sentence dictation took place weekly in this notebook for each group of students. Dictation is a recommended part of the Spalding Method. In this activity, new and previous spelling words were used to create sentences which were dictated orally. Students were asked to spell the words and punctuate each sentence to the best of their ability and then to correct each sentence after it appeared on the overhead screen. Students'

ability to recognize errors in basic punctuation and spelling was monitored through the use of “Gotchas.” In a “Gotcha,” a sentence with several errors was placed on the overhead. Students were asked to copy the sentence as given, find and mark the errors, and then rewrite the sentence correctly. The “correct” version was shown to the students who then double-checked and corrected their sentences when necessary. Not all words in these sentences were previously presented to students through the spelling portion of the program. The “Gotchas” and sentence dictations were designed specifically for the two different levels but the writing probes were usually the same prompt.

Originally the data from the work in these notebooks was going to be used in analyzing the results of the intervention but the scores were so consistently high and the number of words written in the writing probes was so obviously slanted depending on interest in the writing prompt, I decided the data was not useful for analysis. It was, however, an important part of the instruction and weekly assessment.

Computer Programs, Games, and Manipulatives

Students in both groups had access to computer programs, games and manipulative materials that reinforced different reading skills. Because there were not enough programs or computers available for an entire class to use the computer programs at one time, both Stage 1 and Stage 2 groups were divided in half, taking turns working with the various programs. Names and publishers of these other materials are available in Appendix C.

Overview of Instruction

A typical sequence of instructional activities for Stage One students would include a fluency opener called a “sponge.” A question with many possible answers was given and the students had three minutes to give as many answers as they could. The answers were recorded on the overhead and then counted and tallied. When the group achieved a certain number of points, a treat day was provided. Examples of these questions are: How many fruits can you name? How many nouns can you name that start with “m?” How many things can you name that can be found in a living room? After the three-minute sponge, work with phonograms and the five new spelling words was scheduled. Next students usually participated in activities that allowed for more practice on phonics concepts,

practiced and drilled on sight words using the 1000 word packets or read comprehension stories with questions. Once a week, students were given quizzes over the spelling words and markings which included the Writing Notebook/CBM activities described above. At least once a month we tried to schedule time in the computer lab for each group. This did not always work out due to the tremendous technical difficulties we experienced that year.

Stage Two students followed a similar format with sponges, spelling work, weekly writing and dictation exercises, and time spent reading either alone, with a partner, or in a small group. The main difference in the two groups, as mentioned earlier, was the level of difficulty of the material presented.

Reporting of Student Performance

The initial instructional organization was established with grades and regular quizzes to evaluate student progress and knowledge. Permission was granted to give students pass/fail grades for report cards and graded quizzes were not often given. The other teachers and I felt that since all students were being taught at their instructional level and all were successful at their levels, regular grades would be misleading to parents and future teachers. We felt that quizzes added stress to the students and required additional time that took away from student learning and teacher instruction and preparation time. Report cards had the added comment that the class utilized an adjusted curriculum. This system satisfied all involved.

Assessments and Data Analysis

A minor aspect of this study was the identification of an assessment model for measuring change in children with learning disabilities. This study presented the use of CBM assessments within an individual growth curve model, along with pre- and posttest measures of five variables as a potentially valid and reliable means of measuring change.

The Difficulty of Measuring Change

Measuring change has long been a difficult task (Berninger & Abbott, 1994; Bryk & Raudenbush, 1987; Cronbach & Furby, 1970; Francis, Fletcher, Stuebing, Davidson, & Thompson, 1991; Francis et al., 1994; Lyon & Moats, 1997; Rogosa et al., 1982; Rogosa & Willett, 1985; Shaywitz & Shaywitz, 1994). If learning is to be described or thought of as a

change in behavior, a learning disability means a failure of learning has occurred. A change in learning should be an ongoing and continuous process—a characteristic of the individual—in contrast to change as a characteristic of groups (Shaywitz & Shaywitz, 1994). Too often we assume that sitting in a regular classroom where other children manage to achieve constitutes adequate “opportunity to learn” and therefore students who do not learn in these classrooms have learning disabilities of constitutional origin. There are alternative explanations why such children may not learn: Teachers are not being adequately prepared to deal with the normal variation children bring to the task of learning to read or write or the complexity of the reading and writing acquisition process, any aspect which might fail to develop in an individual child (Berninger & Abbott, 1994; Brady & Moats, 1997).

A student in the seventh grade who is still reading at a second-grade level has experienced very minimal change in behavior during the previous seven or eight years of formal schooling. ELL students who may not have had typical amounts of formal instruction (some may have had no schooling) and are illiterate or semi-literate in their first language also will be behind and probably will have a more difficult time than another ELL student who is literate in his or her first language. Most ELL students in the study had a learning disability diagnosis as well as being ELL. This dual identification was a debatable diagnosis because of the problem of determining whether there was a true disability or simply a difficulty with second language acquisition. (It became apparent in the study, however, that a number of the ELL students had considerable difficulty with phonological processing and discriminating between and producing certain phonemes.) For whatever reason any individual student was low in reading, any amount of progress should be worthy of notice and deserving of celebration. However, one difficulty in doing any kind of intervention study with learning disabled children was the ability to assess minimal amounts of progress in student learning. Typical standardized tests were not sensitive enough to detect minute changes (Jenkins & Pany, 1978; Marston, 1989; Marston & Magnusson, 1988).

Most students in the intervention group took the SDRT (Karlsen & Gardner, 1995) in the spring of their sixth grade year. Although the results of these tests helped to place

students in the appropriate groups, they were not not taken very seriously by those of us involved in this intervention: It is quite possible to randomly “fill in the dots” on this particular kind of test and achieve a second grade reading level. The sixth grade SDRT was not very useful for purposes of this study because the results of the test gave no real indication of low ability students’ strengths or weaknesses in basic skills because they focused mainly on comprehension and vocabulary. A test designed for middle level children typically does not test decoding or word attack skills because it assumed these have been acquired; however, these were targeted skills in this study.

Five variables were established to be measured in this study: Comprehension, word recognition, phonemic awareness, spelling, and reading fluency. The means by which these areas were assessed and analyzed will be explained next. Briefly, all five variables were analyzed using pre- posttest scores to establish group averages and statistical significance. The last three also were analyzed using regression analyses for rate of growth for individuals and subgroups. The latter type of analysis is known as the Individual Growth Curve (IGC) model which required that more than two and, hopefully, as many as ten assessment points were recorded. The district-mandated Curriculum-Based Measurement (CBM) probes set the stage for this type of analysis needed.

The Individual Growth Curve (IGC) Model

One of the major areas still in need of study, according to the NICHD, was to answer more specifically the multi-faceted question: For what child, at which stage of development is which method the most beneficial (Lyon, 1998a)? And, how can treatment success and efficacy best be measured (Lyon & Moats, 1997)? The NICHD called for a focus on these questions because most of the major questions about what to teach in early reading instruction have been answered. Now, the particulars of this instruction must be the prevailing target. Researchers in clinical psychology were constantly confronted with questions concerned with how individuals differed in their response to treatment and in their response to various environmental factors. To the extent that the response was measured quantitatively over time, the adoption of an individual growth curve (IGC) model perspective could provide contextually richer answers to such questions (Francis et al., 1991). There are

many times, such as in the current study, when treatments cannot be assigned randomly to students. Since students also are developing differentially during this period, a growth curve assessment of treatment effects may be the only viable method for separating treatment effects from effects of development (Francis et al., 1994). The IGC model has been advocated as a means by which this can be accomplished.

Berninger and Abbott (1994) illustrated how both within-individual and between-individual analyses can be combined for a thorough analysis of learning:

In the first phase, the individual growth trajectory (over multiple points) of each person in the sample is inspected and plotted over time according to a mathematical model (e.g., straight line, quadratic, or negative exponential growth) and a summary of the within-individuals plots is generated. In the second phase, between-subject analysis is used to identify systematic individual differences in growth related to interindividual heterogeneity in obtained covariates, which are either invariant (unchanging over time, e. g., gender) or changing (but relatively slower moving than growth processes being studied, e. g. treatment approach) (p. 169).

In other words, the IGC model provided a way to analyze and understand the growth (or non-response) to treatment within one individual who also happened to be a member of a subgroup (gender, SES, ELL, ADD, etc.) and compare this response to others of that subgroup or across different subgroups.

The focus on the correlates of change comes from the fact that the parameters of the individual growth curves described individual change, consequently, subject characteristics that correlate with change will relate systematically to the parameters of the individual growth curves. This equation allows the investigator to ask questions about individual and group change, thereby enhancing, rather than sacrificing, information about group mean change (Willett, 1988).

This model offered promise as a basis for both defining and diagnosing learning disability and for quantifying and assessing response to intervention/treatment (Shaywitz & Shaywitz, 1994). Studies typically used tests developed to discriminate among individuals at a fixed point in time and the rate of change among individuals was rarely considered during

the instrument design process. Statistical procedures routinely applied to these instruments, such as standardizing the scores to a common mean and variance over time, effectively eliminate the essence of individual growth (Rogosa et al., 1982). Two time points (the pre-posttest design) provide an inadequate basis for studying change (Bryk & Weisberg, 1977; Rogosa et al., 1982). Berninger and Abbott (1994) further explained that individuals who showed measurable gains after a reasonable period of time would be diagnosed as “treatment responders,” who can learn when given an appropriate opportunity to learn. Individuals who did not show any measurable gains would be diagnosed as “treatment nonresponders.” Those individuals who failed to learn when given treatment protocols that research has shown to be effective with other individuals having the same disability have a very poor prognosis because they have failed to learn when given an appropriate opportunity. The statistical theory of the growth curve model, enabled an integrated approach for studying the structure of individual growth in this study.

The IGC model allowed a dynamic view of learning that emphasized individual change and correlates of change. It has the ability to accommodate multiple waves of data, to include cases with incomplete data, and to estimate directly the reliability of the measurement of change (Shaywitz & Shaywitz, 1994). The within-subject stage, and between-subjects stage allowed investigators to model individual change, predict future development, assess the quality of measurement instruments for distinguishing among growth trajectories, and to study systematic variation in growth trajectories as a function of background characteristics and experimental treatments (Bryk & Raudenbush, 1987). Not all of these possible uses of the IGC were considered in this study. The most important component necessary to assessing individual rates of change rather than just difference scores is multiple time points when data was collected. The CBMs, pre-established by the district in which this study took place, made it easy to accommodate the IGC model to answer the research questions that were part of the study.

Curriculum-Based Measurement (CBM)

The apparent limitations of commercially distributed achievement tests (Jenkins & Pany, 1978; Marston, 1989; Marston & Magnusson, 1988), which often do not reflect what

is taught in each classroom (Deno, 1985; Meltzer, 1994), have led school districts and states to look for or develop means of measuring student progress that are more useful. In response to this need, a program of research was undertaken at the University of Minnesota to develop measurement and evaluation procedures that teachers could use routinely to make decisions about whether and when to modify a student's instructional program. The measurement and evaluation system was developed and tested over a period of six years from 1977 to 1983. The design characteristics that guided this research were that the measures would have to be reliable and valid, simple and efficient enough to use frequently, easily understood, and inexpensive (Deno, 1985). This measurement design has become known as CBM and is highly regarded for achieving all of those objectives. The measurements are very reliable even with just a small amount of training, can be carried out quickly in a one-on-one situation (one minute for the reading fluency measurement, no more than five for any other measure), and also can be done in groups (for spelling, writing, and math). Local norms and materials are used, as well as easy scoring to keep costs down and efficiency high.

In addition to being a means of assessment of student progress in various areas, CBM is a problem-solving model, consisting of a set of measurement procedures for quantifying student performance in reading, spelling, math computation, and written expression (Meltzer, 1994). Curriculum-Based Measurement (CBM) assessments are not only quantifiable but also meet the minimum condition for a reliable and valid measurement of change if (1) change is conceptualized as individual growth, (2) tests are constructed that are reliable and valid both for status (given point in time) and for rate of change for individual growth (multiple points of time), and (3) individuals are sampled at more than two (preferably as many as ten) time points (Bryk & Raudenbush, 1987).

Evaluation using CBM centers on the discrepancy between the performance of the particular student and his or her peer group rather than the discrepancy between ability and achievement within the same student. This type of assessment helps in answering the question the NICHD studies are striving to answer—for what types of subjects are treatments maximally (or minimally) effective? Researchers in clinical psychology were

constantly confronted with questions that concerned how individuals differ in their response to treatment and in their response to various environmental factors (Francis et al., 1991).

An issue could be made of the types of skills CBM measures: The reading, writing, and spelling probes do not take into account any form of comprehension assessment. If the students in the study were reading at grade level, this might be important, but, as was repeatedly confirmed in the literature review in Chapter II, word recognition and spelling development are better assessors of reading progress at the early stages of reading development than is comprehension. The students in the study were seventh graders, but their reading development was the same as students who were four or more years younger. It can, therefore, be used as a substitute for comprehension assessments. CBM had an advantage in that it measured both accuracy and rate of reading which were critical to reading comprehension (Arthaud, 1998; Lyon & Moats, 1997; O'Shea, Sindelar, & O'Shea, 1985; Strecker et al., 1998).

Curriculum-Based Measurements (CBM) make the assumption that the deficit in learning is not inherent in the child but instead represents a discrepancy between the academic performance of the child and the performance of his or her peer group in the same classroom (Meltzer, 1994). The analysis of the testing results can help to determine if the discrepancies are a result of such things as SES, gender, ethnicity, learning disability, or learning style. Curriculum-Based Measurement is a method for monitoring student progress through frequent assessment of performance on the actual tasks being taught and adjustment of instruction based on teacher evaluations of the findings. Curriculum-Based Measurement focuses on the evaluation of three major areas: quality of the curriculum, quality of the teaching methods, and the academic performance of the child in comparison with his or her peer group in the same setting rather than throughout a nationally-normed group (Meltzer, 1994)

The Individual Growth Curve (IGC) model used in this study required the flexibility yet regularity that CBM offered. It required the quantifiability yet also the insight to assess qualitative differences within each student and situation, which also was provided by the CBM reading and spelling measures collected. It appeared that the IGC model found its

mate in CBM assessments.

During the 1998-1999 school year, my school district began mandating CBM probes in reading, spelling, and written language and math for its special education students through eighth grade. The spelling assessment that was used in this study was based on CBM methods but modulated in order to be useful with a wider range of students. Curriculum-Based Measurement (CBM) reading probes allowed for assessing student progress in relation to their actual reading level rather than in comparison to their grade level. They appeared to be a very reliable means of measuring the skills the study hoped to develop, even if progress was minimal. Because students were being assessed in their reading at their current reading level rather than their chronological grade, it was believed that achievement could be measured more effectively. Unfortunately, the CBM reading probes did not prove to be as reliable as promised.

Assessments

Assessment was a regular part of the curriculum. Students were placed in the study based on scores taken from the SDRT (Karlsen & Gardner, 1995) taken during their sixth grade year. This same test was administered at the end of the seventh grade year at the culmination of the intervention. Basic reading ability, word recognition, phonemic awareness, spelling, and reading fluency were the five variables chosen to measure growth or lack of growth in students for this study. The next section will describe how each of these measures was assessed and analyzed.

Reading Ability--TRS scores. Pre- and posttest Normal Curve Equivalent scores from the Total Reading Score (TRS) of the SDRT (Karlsen & Gardner, 1995) were analyzed with repeated measures t-tests for all 25 subjects. This was the only standardized measurement given. Mandated by the school district, the SDRT has a reliability factor of .79 to .94 for its four major components and .95 to .98 for the total reading score (TRS) (Engelhard, 1998). Test validity, according to the SDRT manual (Karlsen & Gardner, 1995) was also considered very high. Intercorrelations with the Otis Lennon School Ability Test were .54-.95. Normal Curve Equivalency (NCE) scores from the SDRT were reported on this measure because they were better for comparison purposes than the more commonly

reported percentile score because it was based on an equal interval scale. That is, the difference between two scores is the same at any point on the scale. A percentile score is an ordinal scale which only gives a rank order in the population. A percentile scale magnifies changes toward the middle of the distribution and minimizes changes in scores toward the extremes of the distribution. With an equal interval scale, such as a NCE distribution, a change of X NCE points is the same no matter if it falls in the center, at one end or at the other end of the distribution. Using NCE scores it was possible to cautiously compare scores from two different tests provided they were testing the same basic construct.

Word Recognition--WRC Scores. To measure the word recognition variable, students were given pre- and post-assessments using the SORT (Slosson, 1982). This test was a list of increasingly difficult words which students read aloud. A grade-equivalent score (e. g., 2.9, 3.3, etc.) can be reported with each word read representing one-half month's progress, but for the purposes of this study, the raw score number of words read correctly (WRC) was employed for analysis. The SORT has a reliability factor of +.95 with construct and criterion validity also very high. It correlated at +.90 with the Woodcock-Johnson Test of Achievement (WJTA) (Woodcock & Johnson, 1989) and the Peabody Individual Achievement Test (PIAT). (American Guidance Service, 1989). A repeated measures t-test, was used to determine the significance of the change in word recognition skills from the beginning to the end of the intervention.

Phonemic awareness--CLS Scores. The phonemic awareness variable was measured using the CLS scoring procedure, a CBM-based method. This method of assessing spelling is a much more useful means of determining spelling growth and its predecessor, phonemic awareness (see Moats [1995b] for an extensive overview of spelling development and its relation to reading disability). Phonemic awareness is a difficult skill to assess in older students, but the CBM method seemed to come the closest in giving information about this variable. Curriculum-Based Measurement (CBM) spelling assessments are based on the number of correct letter sequences for each word. Students are given credit for getting some letters right if they appear in the correct order. For example, a student at the beginning of the year may only be able to get the first and/or last letters correct in a word but by the end of

the year may also be able to spell medial consonants, blends, and some vowels correctly which proves tremendous growth has occurred even though there still may not be many more words spelled perfectly. This method of analyzing spelling can give a teacher much information about a student's letter-sound correspondence knowledge, how the student is hearing words, the student's phonological processing skills, and the student's sight word knowledge.

Monthly spelling assessments were given using the Morrison-McCall spelling tests (Morrison & McCall, 1951) rather than typical CBM spelling tests because they can be administered to a diverse group more readily. Curriculum-Based Measurement spelling probes typically consisted of a list of words taken from grade level passages in the reading texts used in each grade. A new word is dictated every seven seconds and scored for correct letter sequence (CLS). The Morrison-McCall tests (Morrison & McCall, 1951), that were used instead, are a part of the Spalding Method. They included eight lists of 50 words that gradually got more difficult in each list. Only the first 35 words of each list was given to students in the Stage 1 group at one time. The Stage 2 students received all fifty words each time. The Morrison-McCall spelling test can assign a grade equivalent score from below first grade to college level spelling ability but for the purposes of this study, the number of correct letter sequence (CLS) scores and words spelled correctly (WSC) were used. Pre-posttest measures for phonemic awareness using CLS were analyzed using repeated measures t-tests. The scores were calculated on the percentage of possible CLS points students earned for each test (see samples in Appendix A).

Spelling--WSC Scores. The spelling variable was assessed using the same Morrison-McCall spelling lists (Morrison & McCall, 1951). The number of words spelled correctly (WSC) on each test were recorded. Pre- posttest averages were compared and analyzed using repeated measures t-tests. The Morrison-McCall spelling tests can give a grade equivalent score based on the number of words spelled correctly. The scale correlates a raw score of 0 with a grade level score of 1.0 and a raw score of 50 with a grade-level score of 13.0. For purposes of this study, grade equivalences were not used. Reliability and validity information was not available for these spelling tests. Reliability and validity scores

for CBM spelling fluency assessments are available but, because the measures were not timed in this study, these scores would not be accurate. Typically, CBM spelling assessments correlate very high (.80 to .99) with other tests of spelling and test-retest coefficients are similarly high for words spelled correctly (.72 to .96) and for correct letter sequences (.73 to .97) (Marston, 1989). Because we wanted a way to assess students at their own reading levels, the district spelling assessments were not used. Those assessments were different for each grade level. With students reading at four different grade levels within the study, it would have been difficult to follow the normal procedures. It was believed that this method of assessing PA and spelling had not been used before with the Morrison-McCall spelling lists.

Reading Fluency—ORF Scores. Curriculum-Based Measurement reading probes were given once a month. A CBM reading probe consisted of a one-minute reading of graded material. The number of words read correctly was compared to district norms for that reading level. When students reached the 25th percentile of a given reading level they were tested the following month at the next higher reading grade level until they again reached the 25th percentile. Even though students were reading at different grade levels, it is believed that ORF numbers can still be used to determine whether progress was achieved. Curriculum-Based Measurement (CBM) validity studies have proven that correlation coefficients between CBM assessments and norm-referenced tests ranged from .73 to .91 and reliability coefficients ranged from .82 to .97 (Marston, 1989). The reading level of the passages used in this study was determined by the grade the material was presented in according to the district literature series, Invitations to Literacy (1993). These passages later proved to be a problem in the study. Pre- posttest averages of ORF measures were analyzed using a repeated measures t-test.

Analyzing the Data for the IGC Model

In order to assess and analyze individual and subgroup rates of growth, according to the IGC model, measurements had to be taken at multiple time points. This analysis was necessary to answer the second research question for this study: Can the analysis of these scores be used to understand and compare the change made by subgroups and individuals

within that group who received this same treatment? It was pre-established that no student data would be used if there were not at least five data sets. For the phonemic awareness, spelling, and reading fluency variables, regression analyses were performed on CLS, WSC, and ORF scores for each individual and subgroup. Three subgroups areas were examined: (1) gender; (2) handicapping condition, which consisted of ELL, Resource (learning disabled), and DLP (cognitively disabled); and (3) Initial Reading Level (IRL) which consisted of groups of students and the reading level--first, second, or third grade--that they began the intervention study. In the next chapter, the results of regression analyses on the individuals and the subgroups will be charted and discussed in terms of what this kind of information can offer the classroom teacher.

The individual growth curve (IGC) model was chosen as one model for data analysis for this study. The frequent CBM probes in reading and spelling worked well with the IGC model which required more than two and, preferably, as many as ten assessment waves (Berninger & Abbot, 1994). Students in the study were, on occasion, absent due to illness, truancy, or suspension. The IGC model was adaptable to this difficulty because of its flexibility. Missing student data was not important with this model as long as there was an adequate number of scores for each student. Data for any student who was expelled or suspended for a long period of time during the study year were not used.

In the next chapter, the results of the analyses using repeated measures t-tests and regression equations will be presented. The five variables measured using TRS, WRC, WSC, CLS, and ORF scores--were analyzed according to a repeated measures t-test to determine if change was significant for the group of students. Then WSC, CLS, and ORF scores were analyzed according to a regression formula in order to see what kind of growth subgroups and individuals made according to the Individual Growth Curve model.

CHAPTER IV

FINDINGS OF THE STUDY

This chapter includes a summary of the study and the presentation of the results of the data analysis. Repeated measures t-tests were performed on pre- and posttest averages for each of the five variables (comprehension, word recognition, phonemic awareness, spelling, and reading fluency) and each hypothesis is then individually addressed. Regression analyses identifying rate of growth slopes on the three variables that were measured monthly were calculated and will be exhibited for subgroups for gender, handicapping condition, and initial reading level along with results of regression analyses for each individual. A discussion of those results, an overview of the problems encountered in the study, and ideas for further research will follow in Chapter V.

Synopsis of the Study

The purpose of this study was to determine if seventh grade poor readers could improve their reading by being taught basic reading skills such as phonemic awareness and phonics and allowed to practice these skills through fluency training. The students in this study were all reading at least four years below their grade level. The difficulty of assessing improvement of these skills in learning disabled students was a given. The study makes a case for teaching these very basic skills to older students, for exploring certain kinds of measures that can detect slight changes in improvement, and analyzing this data in a way that was helpful to the classroom teacher in order to determine if the students are responding or if the instruction needs to be modified in some way by providing frequent assessments and charting growth.

Two standardized tests using pre- and posttest scores were analyzed using repeated measures t-tests. These scores were labeled TRS (for the Total Reading Score given on the SDRT [Karlsen & Gardner, 1995]) for a basic reading ability measurement with the normal curve equivalent scores being reported, and WRC for words read correctly on the SORT (Slosson, 1982) for a word recognition measurement. Three other measures also were taken—correct letter sequence (CLS) for a PA measurement, words spelled correctly (WSC)

for spelling, and oral reading fluency (ORF) for reading rate. The data from these last three measurements were also analyzed using pre- and posttest mean scores with repeated measures t-tests. Then data from subgroups and individuals was further analyzed using a regression analysis in order to determine which subgroups or students responded or did not respond to the treatment. All analyses were done using the Statistical Package for the Social Sciences (SPSS, 2002) program.

In order to collect this data, the SDRT (Karlsen & Gardner, 1995), assessing the Total Reading Score (TRS), was given to participants at the end of the grade prior to the study (sixth) and again at the end of the study year (seventh). The SORT (Slosson, 1982), assessing the word recognition variable, was given at the beginning and end of the study year. Correct Letter Sequence (CLS) and Words Spelled Correctly (WSC) scores were taken from monthly spelling tests using the Morrison-McCall (Morrison & McCall, 1951) spelling lists. Correct Letter Sequence (CLS) is a percentage of possible correct letters in sequence achieved using the Morrison McCall lists of spelling words and was an assessment of phonemic awareness. WSC, an assessment of spelling, was a raw score based on the number of words spelled correctly from the Morrison-McCall lists. Oral reading fluency (ORF) data collected was a monthly assessment of the number of words read correctly per minute on different passages and was an assessment of reading fluency.

Originally, the study sought to include a control group with students in other schools being tested on several of these measures. I was not able to acquire the control group which changed the design of the study but not its intent or direction. The students in the intervention study were divided into two ability groups—Stage 1 and Stage 2—according to Chall's developmental reading stages (Chall et al., 1983), in two different classrooms. A nine-month intervention was implemented providing appropriate remediation in phonemic awareness, phonics and fluency training.

Descriptive data of each student's scores on the five variables and the subgroups each student belonged to can be found in Appendix E. There were a total of 17 students who had pre-posttest scores for the TRS and 25 students with pre- posttest WRC scores. Twenty-five students also had at least five data points on the WSC, CLS, and ORF

measures. These 25 students could further be identified or categorized according to the following subgroups: (1) Gender—12 males and 13 females; (2) Handicapping condition—two DLP (cognitively disabled) students, 16 Resource (RES) students (learning disabled), and seven ELL students; and (3) the Initial Reading Level (IRL) the students began the study—four students with an Initial Reading Level of first grade (IRL1), seven with an IRL of second grade (IRL2), and 14 with an IRL of third grade (IRL3).

As the principal investigator and author of the study, I developed and taught the curriculum to both groups of students and provided activities for three other teachers to implement with a group of students when I was teaching the other group. I was never only an observer in this process. The schedule was arranged so that I was involved with direct instruction throughout each daily 43-minute period during the nine month intervention. Stage 1 students received training in phonemic awareness. Both groups had similar instruction in explicit phonics and fluency training. The groups differed in the difficulty of the spelling words used each week, the kinds of reinforcing activities, and the difficulty of the passages used for fluency training and practice. My hope was to be able to detect improvement in the five areas tested and to be able to analyze the data in such a way as to determine not just how the groups performed as an average but how any student or subgroup of students compared with where they began. This is known as the Individual Growth Curve (IGC) model explicated at length in Chapter III.

Presentation and Analysis of the Data

This section will present an analysis, using repeated measures t-tests, of the data collected for the five measurements that were taken. Then the results of regression analyses using data from WSC, CLS, and ORF measures will be presented. Regression analyses were performed on subgroup and individual scores that were collected five or more times during the study. These analyses will be used to determine the achievement of subgroups as well as to determine individual rates of growth.

Table 2 will display the results of the repeated measures t-tests run on the data collected on the five variables: total reading scores (TRS), word recognition (WRC), phonemic awareness (CLS), spelling (WSC) and fluency (ORF). Each hypothesis will then

be stated and the results discussed.

Table 2

Pre- Post test Comparisons Using Repeated Measures T-Tests for TRS, WRC, WSC, CLS, and ORF Reading Measures

Measurement	n	Pre-Mean	Post-Mean	Std. Dev.	t-value	Sig.
TRS	17	17.765	24.971	7.8832	3.769	.002*
WRC	25	75.080	104.560	21.8250	6.754	.000*
WSC	25	15.00	19.78	5.265	4.356	.000*
CLS	25	61.50	69.33	14.153	2.711	.012*
ORF	25	73.64	85.18	11.287	4.212	.001*

* $p, < .05$

First null hypothesis, H01: There will be no significant differences in pre-posttest scores on the Stanford reading test Total Reading Score (TRS) as a result of instruction in phonemic awareness, phonics, and fluency training.

The results of the repeated measures t-test revealed that there was a significant difference between the pre- and posttest NCE mean scores on the SDRT.

Second null hypothesis, H02: There will be no significant differences in pre-posttest scores for word recognition on the SORT in words read correctly (WRC) as a result of instruction in phonemic awareness, phonics, and fluency training.

The results of the repeated measures t-test revealed that there was a significant difference between the pre- and posttest mean scores on WRC.

Third null hypothesis, H03: There will be no significant differences in phonemic awareness using percentage of correct letter sequences (CLS) pre- posttest scores on the Morrison-McCall spelling tests as a result of instruction in phonemic awareness, phonics, and fluency training.

The results of the repeated measures t-test on beginning and ending mean scores revealed that there was a significant difference between intercept scores (estimated baseline) and endpoint scores on the variable CLS.

Fourth null hypothesis, H04: There will be no significant differences in words spelled correctly (WSC) pre- posttest scores on the Morrison-McCall spelling tests as a result of instruction in phonemic awareness, phonics, and fluency training.

The results of the repeated measures t-test on beginning and ending mean scores revealed that there was a significant difference between intercept scores (estimated baseline) and endpoint scores on the variable WSC.

Fifth null hypothesis, H05: There will be no significant differences in oral reading fluency (ORF) pre- posttest scores as a result of instruction in phonemic awareness, phonics, and fluency training.

The results of the repeated measures t-test on beginning and ending mean scores revealed that there was a significant difference between intercept scores and endpoint scores in the variable ORF.

Next, for each student and subgroup, data were entered into a regression analysis which yielded a rate of growth slope, an intercept (estimated baseline), and an endpoint for the CLS, WSC, and ORF variables. In Table 3, means and standard deviations for intercept and endpoint averages and the range of scores are reported.

Table 3**Summary of CLS, WSC, and ORF Measurement Performance Data (N=25)**

	Mean	Standard Deviation	Range
% of Correct Letter Sequences (CLS)			
Intercept	61.50	14.93	27-84
Endpoint	69.33	9.35	50-87
# of Words Spelled Correctly (WSC)			
Intercept	15.00	7.01	0-30
Endpoint	19.78	6.76	9-33
# of Words Read Correctly in One Minute (ORF)			
Intercept	88.71	20.71	30-131
Endpoint	105.71	17.49	41-153

In Tables 4, 5, and 6, subgroup regression analyses for eight different subgroups are reported. In Table 6, for each student, the intercept, slope, standard error of the slope, t value, and level of probability of the slope is provided. This analysis was modeled after a study by Glor-Scheib and Zigmond (1993) and was in response to the second research question: Can the analysis of these scores be used to understand and compare the change made by subgroups within this group and individuals who received this same treatment? The subgroups were (1) gender; (2) handicapping condition (which included resource students [RES], development learning program students [DLP], and English as a Second Language [ELL] students; and (3) the initial reading level (IRL) which the students came into the program with—first, second, or third grade reading levels.

Table 4 provides the slopes, t-values, and levels of significance for each of the subgroups for the Correct Letter Sequence (CLS) measure. Correct Letter Sequence was a measure of phonemic awareness and was reported as a percentage of possible CLS points on monthly spelling tests.

Table 4

Subgroup Analysis for the Statistical Significance of the Slopes for the Variable CLS

	n	Intercept	Slope	Std. Error	df	t-value	Sig.
Gender							
Male	12	63.895	.202	.297	7	.681	.518
Female	13	59.885	.944	.249	7	3.793	.007*
Handicapping Condition							
RES	16	65.797	.192	.222	7	.866	.415
DLP	2	40.306	1.083	.983	7	1.102	.307
ELL	17	56.987	1.675	.441	7	3.794	.007*
IRL Group							
IRL 1	4	46.152	1.703	.671	7	2.539	.039*
IRL 2	7	65.400	.211	.315	7	.671	.524
IRL 3	13	63.039	.771	.813	7	.949	.374

* $p < .05$

Using regression analyses, the level of significance of the slopes for the CLS measure by subgroups showed that out of eight measures, three showed significance.

Table 5 provides the slopes, t-values, and levels of significance for each of the subgroups for the Words Spelled Correctly (WSC) measure which is a measure of spelling

ability and is presented as a raw score of the number of words spelled correctly on monthly spelling tests.

Table 5

Subgroup Analysis for the Statistical Significance of the Slopes for the Variable WSC

	n	Intercept	Slope	Std. Error	df	t-value	Sig.
Gender							
Male	12	15.758	.346	.080	7	4.321	.003*
Female	13	14.844	.534	.100	7	5.321	.001*
Handicapping							
Condition							
RES	16	16.965	.192	.088	7	2.179	.066
DLP	2	9.431	.192	.303	7	.632	.548
ELL	17	13.029	1.078	.152	7	7.109	.000*
IRL Group							
IRL 1	4	6.781	.896	.279	7	3.214	.015*
IRL 2	7	14.751	.404	.207	7	1.956	.091
IRL 3	14	18.251	.292	.086	7	3.410	.011*

* $p < .05$

Using regression analyses, the level of significance of the slopes for the WSC measure by subgroups showed that out of eight measures, five showed significance.

Table 6 provides the slopes, t-values, and levels of significance for each of the subgroups for the Oral Reading Fluency (ORF) measure—a measure of reading fluency assessed monthly and was recorded as the number of words read correctly in one minute.

Table 6**Subgroup Analysis for the Statistical Significance of the Slopes for the Variable ORF**

	n	Intercept	Slope	Std. Error	df	t-value	Sig.
Gender							
Male	12	79.640	.255	.951	6	.268	.798
Female	13	77.950	.529	.520	6	1.018	.348
Handicapping							
Condition							
RES	16	81.421	.326	.871	6	.374	.721
DLP	2	43.107	2.036	.789	5	2.580	.049*
ELL	17	77.413	2.915	.576	6	5.056	.002*
IRL Group							
IRL 1	4	40.571	3.429	1.357	5	2.527	.053
IRL 2	7	71.529	.302	.640	6	.471	.654
IRL 3	14	83.673	.949	.726	6	1.308	.239

* $p < .05$

Using regression analyses, the level of significance of the slopes for the ORF measure by subgroups showed that out of eight measures, two showed a significant rate of growth.

For each student, the intercept, slope, standard error of the slope, t value, and the probability of the slope is provided in Table 7.

Table 7

Individual Student Analysis for the Statistical Significance of the Slopes for the Variables WSC, CLS, and ORF

Student/ Variable	Intercept	Slope	Standard Error of the Slope	t-value (df)	Probability
01					
CLS	49.793	.828	1.359	.609(5)	.569
WSC	7.833	.690	.233	6.037(5)	.031*
ORF	48.286	1.286	1.465	.877(5)	.420
02					
CLS	25.013	4.656	.790	5.893(4)	.001*
WSC	2.167	1.567	.660	2.375(7)	.049*
ORF	46.305	5.914	4.138	1.429(4)	.226
03					
CLS	72.667	.933	.707	1.321(7)	.228
WSC	14.821	.845	.367	2.306(6)	.061
ORF	114.600	2.800	4.508	.621(4)	.568
04					
CLS	72.291	.480	.168	2.860(6)	.029*
WSC	16.265	.168	.388	.432(6)	.681
ORF	32.848	5.543	1.340	4.137(4)	.014*
05					
CLS	65.986	.892	.717	1.243(6)	.260
WSC	13.144	.180	.191	.941(6)	.383
ORF	48.786	3.786	2.091	1.810(5)	.130

Table 7 (continued)

Student/ Variable	Intercept	Slope	Standard Error of the Slope	t-value (df)	Probability
06					
CLS	45.162	2.420	.822	2.946(5)	.032*
WSC	4.534	1.523	.261	5.844(5)	.002*
ORF	59.943	.829	1.763	.470(4)	.663
07					
CLS	69.472	.750	1.082	.693(7)	.511
WSC	17.111	6.667	.301	.222(7)	.831
ORF	70.179	2.107	3.333	.632(5)	.555
08					
CLS	65.861	.583	.824	.708(7)	.502
WSC	14.806	.550	.309	1.781(7)	.118
ORF	73.733	1.200	2.299	.522(4)	.629
09					
CLS	71.139	.450	.641	.702(7)	.506
WSC	17.194	.317	.237	1.338(7)	.223
ORF	86.131	.893	1.285	.635(4)	.525
10					
CLS	67.167	.100	.795	.126(7)	.903
WSC	16.444	.133	.287	.465(7)	.656
ORF	62.750	2.250	1.172	1.920(5)	.113
11					
CLS	66.226	.519	.519	1.001(6)	.356
WSC	11.466	.872	.337	2.585(6)	.041*
ORF	49.393	3.464	1.408	2.461(5)	.057

Table 7 (continued)

Student/ Variable	Intercept	Slope	Standard Error of the Slope	t-value (df)	Probability
12					
CLS	43.861	.450	.989	.455(7)	.663
WSC	8.083	5.000	.182	.275(7)	.791
ORF	28.857	.000	2.234	.000(5)	1.000
13					
CLS	36.611	.767	.882	.869(7)	.414
WSC	9.500	1.000	.329	.304(7)	.770
ORF	24.448	.657	1.411	.466(4)	.666
14					
CLS	80.889	1.867	1.077	1.733(7)	.127
WSC	15.333	.200	.389	.514(7)	.623
ORF	82.869	2.607	1.205	2.164(4)	.096
15					
CLS	55.528	1.650	.711	2.321(7)	.053
WSC	10.611	.433	.220	1.972(7)	.089
ORF	59.036	.107	3.724	.029(5)	.978
16					
CLS	62.482	.477	.448	1.066(6)	.328
WSC	18.248	.185	.324	.570(6)	.589
ORF	79.500	1.500	1.718	.873(5)	.422
17					
CLS	58.835	.820	.862	.951(6)	.378
WSC	15.083	.583	.377	1.549(7)	.165
ORF	85.143	3.571	3.604	.991(5)	.367

Table 7 (continued)

Student/ Variable	Intercept	Slope	Standard Error of the Slope	t-value (df)	Probability
18					
CLS	52.459	.939	.571	1.645(5)	.161
WSC	12.377	.316	.289	1.093(5)	.324
ORF	68.300	.200	1.507	.133(4)	.901
19					
CLS	65.589	.867	.698	1.242(6)	.261
WSC	23.383	.521	.432	1.207(5)	.282
ORF	67.464	5.119	1.623	3.155(6)	.020*
20					
CLS	73.889	.467	.449	1.040(7)	.333
WSC	25.389	3.333	.309	.108(7)	.917
ORF	114.893	1.393	3.134	.445(6)	.672
21					
CLS	82.111	.533	.417	1.278(7)	.242
WSC	30.028	.317	.346	.916(7)	.390
ORF	112.250	2.500	1.302	1.919(6)	.103
22					
CLS	63.500	1.167	.944	1.236(7)	.256
WSC	21.306	1.050	.285	3.686(7)	.008*
ORF	70.357	5.310	1.042	5.097(6)	.002*
23					
CLS	68.279	9.910	.406	.244(6)	.815
WSC	20.041	.676	.418	1.617(6)	.157
ORF	74.857	1.810	1.193	1.517(6)	.180

Table 7 (continued)

Student/ Variable	Intercept	Slope	Standard Error of the Slope	t-value (df)	Probability
24					
CLS	66.306	.283	.747	.380(7)	.716
WSC	19.278	.100	.176	.586(7)	.587
ORF	65.973	1.818	.928	1.960(5)	.107
25					
CLS	52.054	1.068	1.289	.828(6)	.439
WSC	18.477	.347	.356	.974(6)	.368
ORF	107.179	7.143	2.037	.035(6)	.973

* $p < .05$

Even though, statistically, the intervention treatment had a significant impact on all five variables for these students as an average, out of 75 possible scores, only 11 were actually significant for the individual students. Four students had significant effects on two of the measures, and three students had significant improvement on one of the measures. This left 19 students not achieving significant growth on any variable according to this type of analysis.

Summary of Results

The overall purpose of this intervention study was to see if basic reading instruction consisting of phonemic awareness, phonics, and fluency training would improve the reading ability of learning disabled and ELL seventh graders. These students were all reading four or more years below their grade level. A secondary purpose was to discover if the data collected on five different variables could be analyzed and displayed in such a way as to allow the typical classroom teacher to determine whether or not an individual student responded positively in comparison to the average scores of the students receiving the same instruction and in comparison to subgroups within that same group of students.

Descriptive raw scores for the five variables were given followed by tables that depicted the results of pre- posttest scores for the variables. The results of this type of analysis portrayed the intervention as a success with all five variables showing significant improvement for the students as an average. Regression slopes were then calculated for each subgroup and individual student on the three measures (WSC, CLS, ORF) that were taken monthly to see which subgroups and students achieved statistically significant gains on any one measure. These last analyses could then be used to compare individual student gains with average gains made by all 25 students and averages of subgroups. The results of this type of analysis were not nearly as convincing with few of the subgroups or individuals achieving significance in their growth. However, the next section will demonstrate another way of looking at these results, using Effect Size (Cohen, 1988), that will confirm that the intervention was more effective than it appeared.

Chapter V will review the intent and design of this study, will discuss the difficulties encountered in attempting the study and discuss the study results. A method of using the statistical analysis in order to judge Effect Sizes of each treatment for the subgroups and individuals will be presented and discussed. The chapter will conclude with solutions to some of the problems encountered, a description of changes already made in the intervention procedures as a result of what was learned in the study, and ideas for further research and action.

CHAPTER V DISCUSSION

Chapter V will review the intent and design of this study, discuss the difficulties encountered in attempting the study and elaborate on the results charted in Chapter IV. It will conclude with solutions to some of the problems encountered, information about changes already made in the intervention procedures as a result of what was learned in the study, and ideas for further research and action.

Intent and Design of the Study

The purpose of this study was to determine if a basic skills approach to reading instruction would assist a group of low-ability seventh graders in improving reading skill. Phonemic awareness and phonics instruction, along with fluency training activities, were provided for a nine month period during a 43-minute reading class period. Measures of comprehension, word recognition, phonemic awareness, spelling, and reading fluency were taken and analyzed with repeated measures t-tests. A secondary inquiry in this research was to determine if there was a way to use data analyses to compare student growth within the group receiving instruction to reveal reasons for growth or lack of responding. Far too often, students are compared to national norms. As the principal investigator and facilitator of this instruction, I wanted to find a way to analyze the individual rate of growth of students in the intervention as well as within certain subgroups to which each student belonged to know more about what kind of instruction works with what kind of student. In order to do this, regression analyses on data collected on phonemic awareness, spelling, and reading fluency measures were performed for subgroups and individuals.

Participants

The participants in this study were 38 seventh-grade students on two seventh grade middle school teams in a Midwestern rural city of 40,000. All students scored at the 25th percentile or lower on the SDRT (Karlsen & Gardner, 1995) taken during their sixth grade year or on a fourth grade level CBM passage and were either Resource students with an IEP or ELL students. Due to attrition, attendance, and behavior incidents, the data of only 25 of the original 38 students were used in the analysis of the results for this study. Appendix E

charts descriptive information about each student according to subgroup and raw score data.

Design

The 38 students in this study were part of two different middle school teams in the same middle school. After preliminary testing and instruction, the students were divided into two groups based on their reading ability. I referred to these groups as Stage 1 and Stage 2 groups according to Chall's (1983) reading development theory . At the beginning of the year, Stage 1 students were reading at a first or second grade level, Stage 2 students were reading at a third grade level. The division between these two groups was about equal with 19 in each group most of the year. Dividing students according to these ability groups required that cross-team instruction be utilized. This meant that some students had their reading class in the other team's reading classroom and with the other team's reading and resource teachers. This cross-team method was my brainchild. It allowed more students to be able to participate in the intervention curriculum and receive the developmentally appropriate instruction.

Five teacher participants and several other adult helpers were a part of this intervention. I was the main teacher and developed the curriculum that was used throughout the year for both groups of students, trained the other teachers, and instructed in both classrooms. Another reading teacher and a resource teacher implemented the curriculum for the Stage 2 students. For the Stage 1 students, a resource teacher and an ELL teacher directed the instruction when I was working in the other classroom. In the Stage 1 classroom, an ELL interpreter was present daily, and an ELL student teacher, a parent volunteer and a student "body guard" were also present at various times throughout the year. All of the teachers involved agreed upon this arrangement and participated in it for two years—the year prior to the study in which we piloted the program and the study year. I presented the basic instruction to both groups of students and the other teachers directed activities to reinforce that instruction. I was teaching at all times in one classroom or the other.

Phonemic awareness activities, the Spalding Method (Spalding, 1986) of multisensory reading instruction using explicit phonics, and fluency training were the major

components of this intervention. All students were tested monthly on phonemic awareness (PA), spelling and reading fluency which was analyzed and reported according to correct letter sequence (CLS) for PA, words spelled correctly (WSC) for spelling, and oral reading fluency (ORF) by reading passages and counting the number of words read correctly during one minute. Most of the students were administered the SDRT (Karlsen & Gardner, 1995) and all students were given the SORT before and after the intervention. These scores were reported as a Total Reading Score (TRS), using Normal Curve Equivalency scores from the Stanford test and words read correctly (WRC) for the SORT, a measure of word recognition.

Research Questions

There were two research questions this study hoped to answer:

1. What changes in the total reading scores, word recognition, phonemic awareness, spelling and reading fluency occur in the reading ability of low-achieving 7th grade students as a result of instruction in phonemic awareness, phonics, and fluency training as measured by pre- and posttests of the (a) SDRT using the Total Reading Score (TRS) and (b) the SORT scores recorded as the number of words read correctly (WRC); (c) correct letter sequence (CLS) and (d) words spelled correctly (WSC) as determined by the Morrison-McCall spelling lists; and (e) oral reading fluency (ORF) scores through the use of CBM reading probes?

This question was answered through the use of the following null hypotheses:

H01: There will be no significant differences in pre-posttest scores on the Stanford reading test Total Reading Score (TRS) as a result of instruction in phonemic awareness, phonics, and fluency training.

H02: There will be no significant differences in pre-posttest scores for word recognition on the SORT in words read correctly (WRC) as a result of instruction in phonemic awareness, phonics, and fluency training.

H03: There will be no significant differences in PA using percentage of correct letter sequences (CLS) pre-posttest scores on the Morrison-McCall spelling

tests as a result of instruction in phonemic awareness, phonics, and fluency training.

H04: There will be no significant differences in words spelled correctly (WSC) pre-posttest scores on the Morrison-McCall spelling tests as a result of instruction in phonemic awareness, phonics, and fluency training.

H05: There will be no significant differences in oral reading fluency (ORF) pre-posttest scores as a result of instruction in phonemic awareness, phonics, and fluency training.

A second question the study addressed was:

2. Can the analysis of these scores be used to understand and compare the change made by subgroups and individuals within that group who received this same treatment?

The purpose of this last question was to see if analysis of student data could allow the typical classroom teacher to be able to detect differences in individual responses to instruction as well as to determine and compare change within any subgroup of the students who received the same instruction. I felt that this kind of analysis, if possible, would be more beneficial to the classroom teacher than comparing scores based on national norms or just looking at individual scores with no basis for reporting the strength or weakness of the measured change. The subgroups that were analyzed were (1) gender, (2) handicapping condition such as ELL, resource (RES) and developmental learning program (DLP) students (a program for cognitively disabled students); and (3) the initial reading level (IRL) of the student at the beginning of the year. This last subgroup was divided into those students who began reading at a first grade level, a second grade level and a third grade level.

Problems with the Study

Any time action research is the method of choice for a study, a risk is being taken. The reality of authentic learning does not compare to a clinical, sterile one. This intervention study was no exception.

Some of the things that went wrong in the current study were:

•A control group, part of the original proposal for this study, was unattainable for various reasons:

--it took 2 1/2 months for the Institutional Review Board (IRB) approval to come through which made it very difficult to elicit the cooperation of the teachers and students that would be involved in the control group. Not enough students agreed to participate in the study--partly because I was not given access to the students or their parents prior to the consent forms going home and partly because, being pressed for time, I could not get the full cooperation of the teachers beforehand;

--a teacher at one of the other schools was antagonistic towards the study and did little to support it (one of the major reasons the control group design was dropped);

--the level of the students in the other two middle schools from which a control group could be selected was so high that even if there had been complete cooperation, there may not have been enough of the right ability (four or more years below grade level) to make a control group of 30, so the control group was eventually eliminated as part of the study design.

•The level of the students in the treatment group that were taught during the year of the study were much higher than those in the group the year before which meant the curriculum had to be adjusted from the pilot study year.

•There was little in the way of developmentally appropriate materials for seventh grade low readers.

•Teachers assisting in the intervention made their own decisions about students selected to be in the study (based on behavioral needs rather than academic) that did not meet the criteria and made decisions about coursework while I was not present. Information was given to students about these decisions without my being aware of it so I had to go along even though it did not fit the structure of the study.

•Students on each of the two teams in the intervention study were placed in such lopsided fashion that most of the lowest students were on one team and the slightly higher ability students who participated, for the most part, were on the other team. This made it

difficult to make adjustments in students selected because we needed to keep the class sizes on the teams comparable.

•One of the reading teachers assisting in the study took a semester's leave of absence due to an unexpected pregnancy during the entire second semester and a long-term substitute teacher had to be used instead of the trained teacher.

•In one of the classrooms, there was a student teacher for ELL, a bodyguard for one of the students, and a parent volunteer in addition to the prearranged instructors—the SPED teacher, the ELL teacher, the ELL interpreter, and me—in one classroom. At one time, there was a possibility of seven adults in one room making the replicability of the study highly unlikely.

•There were such constant computer system problems that an important part of the treatment—computer software for reading—was not able to be implemented as planned.

•Even after two years of being in the classroom with me, one of the teachers still had not learned the phonics part of the method and, as a result, not all lesson plans were followed by this person when I was not present;

•Testing was not consistently handled by the four teachers doing the assessing even though all were trained similarly.

•District-mandated materials used in the testing of reading fluency (it was suspicioned by the teacher participants and later found to be true) were inaccurate representations of the grade level at which they were used. This discrepancy will be explained later in this chapter.

Even with all of these problems, I still felt the intervention was a success. Most of the obstacles were beyond my control and may have occurred regardless of the year the study was done or the amount of preparation beforehand. Therefore, the results are a true examination of what happens in schools everywhere, but rarely with such intense scrutiny. A discussion of these problems, why they occurred, how some were resolved the following year, and other improvements made in the program as a result of what was learned by completing the study, will be discussed in a later section of this chapter.

Discussion of Results

Due to the problems encountered in this study plus the fact that the population was so small and there was no control group, all results must be examined critically and generalizations across other groups or similar situations would not be wise. Because this study was a slice in the life of an ongoing program in a real school, however, this is not really a matter of concern. All that can be done is to set up a plan and attempt to facilitate it.

The results of these analyses demonstrated that the kind of instruction afforded these students, who were significantly behind their peers in reading, is instruction that benefited them, as an average. I predicted that the TRS scores and the WSC scores would be least likely to demonstrate significance. The SDRT, which produced the TRS scores, was a standardized reading test. Students with reading problems are less likely to demonstrate noteworthy improvement on a test of this type because it was not sensitive enough to detect the slight improvements that learning disabled students are likely to show (Jenkins & Pany, 1978; Marston, 1989; Marston & Magnusson, 1988). Therefore, the significant improvement students made on this measure came as a welcome surprise. It also was predicted that WSC scores would not show significant improvement because they are a measure of correct or incorrect spelling with no allowance for "close" so, again, the significant results were satisfying.

When the total student population was analyzed for WSC, CLS, and ORF according to various subgroups such as gender, handicapping condition, and initial reading level, it appeared that the results were mixed. The small number of students in each group make generalization of the results impractical but, for the average classroom teacher, looking at these numbers can be helpful to determine which type of student to focus on in which area of instruction. Out of 24 measures in the subgroup analysis, 10 showed significance. The WSC scores showed the most improvement across the groups and the ORF showed the least. One possible reason for the students not demonstrating as much progress in oral reading fluency will be discussed in a subsequent section.

According to this subgroup analysis, the ELL population showed the most improvement with significant improvement across all three variables. This is not a surprising

result because ELL students are not necessarily reading disabled. Many of the ELL students could read in their own language and simply used the instruction provided to significantly improve their reading skills in the English language.

Overall, girls demonstrated more improvement than boys, ELL students showed more improvement than either of the other two handicapping conditions (RES and DLP), and the lowest initial reading level (IRL1) depicted more improvement than the other two, higher, reading levels (IRL 2 and IRL 3) with significant improvement by IRL1 students in two of the three measures.

On an individual level, the results were less positive. Out of 75 possible scores (three measures for each of the 25 students), only 11 showed significant improvement. It was here that the individual growth curve analysis seemed to break down: If, as a group, all of the average growth scores were significant but few of the individual and subgroup scores were, it was difficult to tell just what was going on. It does, however, demonstrate the problem of assigning weight to group scores as a determiner of quality instruction.

The analysis and reporting of this information was inspired by a similar study by Glor-Scheib and Zigmond (1993) where a group of students were instructed using a multi-sensory reading method. In this study, 13 of the 24 individual slopes were significant for ORF. This study did not report individual student raw scores, only a range of scores and only ORF was measured so it was not possible to compare students using raw data. However, the ORF measures in the 1993 study were taken weekly rather than monthly which may have made it possible to analyze the growth more accurately and could then account for the level of significance being greater or it was simply better instruction.

My motivation in performing this type of analysis was to find a way of answering the oft-stated NICHD question: "For which children are which instructional approaches most beneficial, at which stages of reading development?" (Lyon 1998a). This study, as it was designed and analyzed, did not achieve that purpose. As it is, it is very difficult to look at any of this data, descriptive or statistical, and be certain which individuals benefited the most or how to change instruction so that more students had greater achievement. What was needed was a way to measure the magnitude of a treatment effect to determine if the rate of

change was important, even if not significant--a cut-score, so to speak. I found this was relatively easy to do. The method I employed to determine treatment effects was not included in Chapter IV because it was not a part of the original plan for analysis. However, it seemed to be exactly what I was hoping to find in order to truly pinpoint which students were responders and which were not and in what areas.

Some CBM experts (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993; Hasbrouck & Tindal, 1991) have established weekly growth rate goals of 1 (typical) to 1.5 (ambitious) words per week in oral reading fluency. (There are no comparable standards for spelling or phonemic awareness.) For years, charts have been made comparing an individual student's actual CBM scores to this standard measurement. However, this standard growth is one generated by groups of students, not necessarily reading disabled, and it does nothing to show the actual average growth of the students in a given classroom getting the same instruction by the same teacher. These were factors that needed to be taken into consideration. When significance is assigned to growth, it is to rule out the possibility of the growth being due to chance or even maturation. However, if there is growth, of any kind, for a reading disabled student, it is important to know. Significance is typically registered when growth is two or more standard deviations above the control group or above 0 when using regression slopes. In the regression analyses performed on individual student and subgroup scores the rate of growth compared to zero must be determined. To anticipate that learning disabled students would produce the kind of growth that was two standard deviations above zero before an intervention could be considered successful was to expect too much.

Cohen (1988), developed a formula for determining the effect size when comparing scores or when determining rate of growth. Effect size (ES) was a name given to a family of indices that measured the magnitude of a treatment effect. Unlike significance tests, these indices are independent of sample size. ES measures are the common currency of meta-analysis studies that summarize the findings from a specific area of research. There is a wide array of formulas used to measure ES. Cohen's formula (known as Cohen's d) uses the t -value of a statistical analysis and the df in order to assign a treatment effect. A website ([www.uccs.edu/~lbecker/psy590/escalc3.htm#means and standard deviations](http://www.uccs.edu/~lbecker/psy590/escalc3.htm#means%20and%20standard%20deviations)) provided a

calculator for Effect Size. All that was necessary was to enter the t-value and the df and it automatically computed an effect size. Cohen (1988) correlated the effect size to certain percentiles and established a determiner of the effect which has been used by others (Lipsey & Wilson, 1993; National Reading Panel, 2000). It was through the National Reading Panel's report that I first learned of this procedure.

When determining effect size, 1.0 means the effect is one standard deviation above the mean or above zero. In statistical analyses, this is not significant but it is, in fact, a noticeable difference. Cohen has rated an ES of .8 as strong, .5 as moderate, and .2 as small. Using his formula and the calculator, I charted effect sizes for all of the eight subgroups in the study for the three variables of CLS, WSC, and ORF, as well as each individual's ES for those variables. Tables 8 and 9 document these results.

Table 8

**Mean Effect Size* for CLS, WSC, and ORF for the Subgroups
Gender, Handicapping Condition (H-C), and IRL**

	CLS	WSC	ORF
Gender			
Male	.51	3.27	.22
Female	2.87	4.02	.83
H-C			
RES	.66	1.65	.31
DLP	.83	.48	2.31
ELL	2.87	5.37	4.13
IRL Group			
IRL1	1.92	2.43	2.26
IRL2	.51	1.48	.38
IRL3	.72	2.58	1.07

*According to Cohen (1988), Effect Size, calculated with the t-value and the df of a measurement analysis, can be classified as: .8 = strong effect, .5 = moderate effect, .2 = small effect.

Table 9

Subgroup (Gender, Handicapping Condition [H-C], and Initial Reading Level [IRL]) and Effect Size* for Individual Students for CLS, WSC, and ORF

Student	Gender	H-C	IRL	CLS	WSC	ORF
1	M	DLP	2	.54	5.40	.78
2	F	ELL	1	5.89	1.80	1.43
3	F	ELL	2	1.00	1.88	.62
4	M	RES	2	2.34	.35	4.14
5	M	RES	3	1.01	.77	1.62
6	F	ELL	1	2.63	5.23	.47
7	M	RES	2	.52	.17	.57
8	F	ELL	3	.54	1.35	.52
9	F	RES	2	.53	1.01	.64
10	F	RES	3	.10	.35	1.72
11	M	RES	1	.82	2.11	2.20
12	M	RES	1	.34	.21	.00
13	F	DLP	2	.23	.66	.47
14	M	RES	2	1.31	.39	2.16
15	F	RES	3	1.74	1.49	.03
16	F	RES	3	.87	.47	.78
17	M	ELL	3	.78	1.17	.89
18	M	RES	3	1.47	.98	.13
19	F	ELL	3	1.01	1.08	2.58
20	F	RES	3	.79	.08	.36
21	M	ELL	3	.97	.69	1.57
22	M	ELL	3	.93	2.79	4.16

Student	Gender	H-C	IRL	CLS	WSC	ORF
23	F	RES	3	.20	1.32	1.24
24	F	RES	3	.29	.44	1.75
25	M	RES	3	.68	.80	.03

*According to Cohen (1988), Effect Size, calculated with the t-value and the df of a measurement analysis, can be classified as: .8 = strong effect, .5 = moderate effect, .2 = small effect.

Keeping in mind that .8 is considered a strong effect size, subgroup scores now show 16 of the 24 measures as having a strong treatment effect whereas only 10 showed significance. Every subgroup had at least one of the three variables that demonstrated a strong ES. For the individuals, only 11 of the 75 scores achieved significance, but 39 of those effects could actually be considered strong. Only three individuals did not have at least one variable with a strong ES. A closer look at both subgroup ES and individual ES now makes it possible to determine who responded, who did not respond, and to compare individual responses to subgroup ES to determine how any one individual compared to like individuals receiving the same intervention treatment. Although it was not my purpose to analyze this any further, but to find a way for teachers to receive useful information about their own teaching, it was interesting to note which individuals were responsible for strong ES in certain subgroups, and which individuals responded in one or even none of the variables. The information available through the ES calculations gives pause to other areas of research or inquiry that could be considered. ELL students demonstrated the most positive change. How would ELL students in a non-skills program do compared to a skills program such as this intervention? How did female ELL students do compared to females who were not ELL? How did male ELL students compare to female students? How did male RES (resource) students do compared to female? Did IRL1 ELL students show more or less improvement than IRL1 non-ELL students? As for the individual ES, knowing these students as I do, I can reflect on why I think they may have responded or not responded.

Emotional problems, family situations, attitudes can all be a part of learning or not learning. This kind of information can give a classroom teacher something concrete to deal with and to consider in changing entire instructional procedures or in working with individual students. It is necessary, of course, for data to be collected and a statistical analysis made in order to get the t-value and the df. This may be a difficult, but not impossible task, for the regular classroom teacher. Data is collected all of the time in school systems but often nothing useful comes of it besides reporting on Individual Education Plan (IEP) records. In addition to being able to determine individual and subgroup responses, ES might be very useful (although, perhaps, also frightening) to apply this kind of analysis and calculation to determine who is teaching effectively and who is not. It also could be employed, if there are consistent teaching efforts across a school building or a district, to see if a program being implemented is working.

This kind of analysis might be seen as just a way for investigators to feel good about their method and be able to “prove” that it works because the expectations have been lowered; however, the ability to achieve true significance is an extremely high expectation and one that can lead to frustration and a feeling of defeat. Effect size calculations require either a control group, or in this instance, enough measures taken across a time period to be able to use a regression analysis and get a t-value and df for the calculation. Curriculum-Based Measurements (CBM), in all of their simplicity and efficiency, appear to be a wonderful device for this kind of examination.

Reflections on What I Learned

The intent of this study was to see if the treatment intervention I designed and implemented improved the reading skills of the students with which I was working. I learned a great deal more than that. My roles both as teacher and researcher gave me insights into a range of experiences that I would not have had if I were just teacher or just researcher. Once the aspect of having a control group was abandoned, I felt like I was able to relax. During the course of the study year, I do not recall being concerned about anything more than implementing the program and assessments as they were designed. I was able to score and record the results of the data collected during the first semester soon after it was

over; however, due to other aspects of my doctoral program that took precedence and personal commitments in my life, I did not score or begin the actual analysis of the rest of the data until two full years later. Being a full-time teacher and single parent did not allow me the opportunity to change into the researcher mode until then. Even during the intervention year, I was not consumed by the workings of this study. The groups that I taught as part of the intervention consisted of only one-sixth of the preparation and teaching for which I was responsible. I only saw those students academically during that 43-minute period. Since the intervention itself was not something entirely new, I did not have to spend an inordinate amount of time planning and preparing—I simply taught the students, collected the data, and consulted with the other teacher participants about what we would be doing next. In many ways, I believe this makes the study more valuable because what transpired was very natural, not contrived.

In reflecting on the progression of the study year, the intervention itself, and the difficulties and anomalies encountered, I feel that what I learned about reading and research was as important as what the students may have learned from me.

I did do a little follow-up on some of the students using NCE scores from another standardized test that my district had mandated the year following the study—the Iowa Test of Basic Skills. The progress of some students was pleasing with some making a much as a 30- or 40-point gain from the beginning of their seventh grade year to the end of their eighth grade year. Of the 22 students that had available scores, there was an average gain of 10.5 NCE points. Seven of these students actually scored lower which is difficult to accept and understand. Of those 18 students who did demonstrate progress in their scores, the average gain was 18 points. I do not know what kind of reading program these students had during their eighth grade year because they could have been on any of three different teams participating in three different programs. This information was helpful in knowing that the students, for the most part, did not regress or stabilize but were continuing to show improvement.

As a result of attempting this intervention, I learned a lot and what I learned has helped in redesigning the remediation program and resolving some of the apparent

difficulties that were encountered. The year following the study, I changed my program immensely. I had not yet had time to do the analysis so I did not know the results of the intervention, but the special education teacher and I decided that what our students needed more of was time to actually read at their developmental level. It only makes sense—what if first and second graders only had forty-three minutes of reading per day? In order to provide more reading time, we disbanded the cross-team approach and decided to work only with the lowest students on our own team. With the approval of our other team members, we engineered a two-period block class for our bottom 20 students. All students were provided some basic PA instruction and individual assessments before we divided them into two smaller groups of 10 each—we called one “Gold” (the lower group) and the other “Silver.” The flexibility that we have had with a two-period block has been rewarding. It required that the special education teacher and the ELL teacher be available for two periods in a row to work with the same 20 students. The English teacher and I provided one period each for half of the students. I typically worked with the lowest group and she worked with the other group. The SPED and ELL teachers each took a group (Gold or Silver) during the two periods, divided the group further into two groups of five and provided one period of guided reading each day for all four small groups. Since the year of the study, an immense amount of resources (Sundance Publications) have become available for working with low-ability middle level students. We purchased multiple copies of books at first, second, third, and fourth grade levels that were written with middle level students in mind. We are seeing results that we had not seen previously. Unfortunately, no one is documenting or analyzing the results, but we know that our students are reading more and better than with our previous arrangement.

Consistency and reliability throughout the study were things that concerned me and that I would improve if I were to repeat an intervention study of this kind. The consistency factor played a role in two different, but related, ways. Both have to do with testing. My district has been prone to “jumping on the bandwagon” with programs and procedures, some of which work, some that don’t, some that are used a very long time, some that are short-lived. This experimentation would not be so bad but, at the same time, our means of

assessing our programs has changed just as often so there has been no way to compare them. I have been a part of about as many different kinds of assessments as I have had years in the district (16). We have used the Comprehensive Test of Basic Skills (CTBS), the Iowa Test of Basic Skills (ITBS), the (California Achievement Test (CAT) , the Stanford Diagnostic Reading Test (SDRT) , Curriculum-Based Measurement (CBM), the Basic Reading Inventory (BRI) , the Informal Reading Inventory (IRI), running records, and so on. A standard assessment of some kind is necessary or there is never a baseline that you can count on. Even when the same kind of test is administered, the consistency in training and fidelity of use of that instrument can still be troublesome.

I believe that both standardized and informal measures are important pieces in determining the strength of any program and the progress of any student. There are difficulties with any of these approaches separately, but together, they help to create a more dynamic picture. Standardized tests are necessary in order to compare students across a large group and for reporting procedures. Informal assessments, especially if taken frequently such as with CBM, can be very helpful in determining the impact of instruction during the actual school year to see if progress is being made or changes should be implemented to increase progress.

Informal measures such as CBM, although not time-consuming, are not easily integrated into a large group situation such as in this study in a middle level classroom. Typically, an elementary classroom might be comprised of only four or five learning disabled students who need special attention and frequent measurements. The elementary teacher would have access to these students all day throughout an entire year. The teacher could easily assess these few students frequently and also have the opportunity to observe these students applying the strategies and skills being taught. In my situation, it was difficult to observe students applying the skills that were being taught except for the rare occasion that I was not instructing a large group and was able to interact with students individually or in small groups. Even with the execution of a two-period block, it has still been my job to provide the direct instruction with little time for observing and assisting students in actually applying the skills and strategies.

During the course of the study year, I was unable to assess as frequently as is recommended by CBM experts—once per week. CBM is ideal for elementary classrooms and can be effectively used to monitor those students with which there is a concern. At the middle level where I have 20 special students that I see only one period a day plus 80 more students that I have to plan for and teach, this type of assessment is not as pragmatic. It is difficult to assess frequently enough and even to score and chart the progress of this many students in the time given. However, I feel that my study does show that, for the most part, the type of instruction that was afforded the students was beneficial and should be provided even if monitoring and adjusting is not always possible in the way that CBM was designed.

Consistency was the cause of multiple other problems in this study which makes me think that bigger is not necessarily better unless there is a way to check for fidelity of treatment. As the only person capable of providing the actual direct instruction for the two groups, I did not have the opportunity to always know what the other teachers were doing. For example, although the two SPED teachers were similarly trained in CBM reading fluency measures, it was not discovered until the end of the year that one of them always tested with a sixth grade passage and the other used the district procedure of testing students at a particular grade level until they achieved the 25th percentile according to the local norms. There was no way to know how much or in what way this inconsistency affected the results. In terms of the ORF scores, there was more than just the consistency of training and testing that actually went wrong—there were also problems with reliability.

The problems with reliability came about, largely, due to complications with the ORF passages that we were mandated to use by the district. At the outset of the study, I held to the assumption (number three) that the reading passage choices from the district curriculum could be used reliably to reflect the reading level of the student. This assumption proved to be inappropriate. I knew in advance that the curriculum the passages came from was whole language-based and proclaimed by the teachers as being too hard for the younger students to read. To be true to the CBM model, the passages were, nevertheless, chosen by district level authorities from the anthologies and used as assessment passages of fluency no matter what grade level they were actually written. Some CBM experts say that

the difficulty of the passage does not seem to matter in the final accounting of CBM accuracy and validity (Fuchs & Deno, 1992; Hintze, Shapiro, Conte, & Basile, 1997; Hintze, Shapiro, & Lutz, 1994) but others believe that it can, in fact, make CBM less sensitive (Fuchs & Deno, 1992). As the CBM tests were given during the study year, the teacher participants who did the testing commented all year on the range of reading difficulty that was required at the same grade level.

This apparent difficulty was noticed by others in the district and the following year the same passages were scored for grade level and used accordingly rather than by the grade anthology the passage was in. As expected, there were wide variations. One first grade level passage actually was rated at a fifth grade reading level. This is because the curriculum series, Invitations to Literacy (1993), was not written for students to read as much as to be shared and enjoyed—direct from a meaning emphasis agenda. Unfortunately, by seventh grade, I could see that, for a number of our students who had been through this district program, sharing and enjoying through being read to was about all the students had been able to do because no one taught them to read and the material was always too difficult for them to catch up. I have had complaints from students who said that was all they ever did in reading in grade school—teacher modeling—and rarely read themselves because they did not know how.

Curriculum-Based Measurement (CBM) experts have taken heed of the problem of inconsistent and unreliable passage levels and, even though there is evidence that passage difficulty does not affect the accuracy of the measurement, others have suggested the use of more standardized passages so this would not be a potential complication (Duffelmeyer, 1983; Fuchs & Deno, 1994; Mehrens & Clarizio, 1993). Providing standard, leveled passages takes away from having the assessments actually based on passages taken directly from the curriculum (hence, CBM) but it would then remove the uncertainty of the passage levels and could still be used with local norming procedures. A set of passages that have been verified for reading level has been developed at Macquarie University Special Education Center (Wheldall & Madelaine, 1997)

Another suggestion that has been put forth by CBM proponents was the idea of

including comprehension questions with the ORF passages. There are tests like this already; we are currently using them in our district. But the types of questions suggested by one source makes more sense than some of the other procedures I have been privy to such as the Basic Reading Inventory (BRI) (Johns, 1988). In the BRI one-on-one assessment of fluency and comprehension, the questions seem to rely more on prior knowledge and memory rather than critical thinking and comprehension. Arthaud (1998) may have the right idea in the kinds of questions that might give us more information about our readers. She used a question classification developed by Ruddell (1978) with questions being developed about the oral reading passages students read for ORF measurements. Each passage contained eight questions which were developed according to seven possible types: detail, sequence, cause and effect, main idea, predicting outcome, valuing, and problem-solving questions. This would make the comparison of ORF to comprehension more meaningful, and, possibly, more accurate.

Oral reading itself can be called into question when used to actually assess comprehension. Rasinski (1990), in discussing the relationship between fluency and comprehension, stated:

When engaged in oral reading, especially when prior silent reading is not permitted, readers often channel their attention and cognitive energy into decoding and allocate little attention to understanding the passage. This is particularly apparent in retelling-like tasks that follow oral reading in which children are given minimal or no cues as to the content of the passage (p. 41).

It is often difficult for some readers to attend to meaning when they are reading aloud (I myself can attest to this). Some would call this “word calling” and blame “heavy reliance on phonics” rather than what it could be—a difficulty comprehending while oral reading. It may have no bearing on how well someone may comprehend while reading silently. Even though fluency equals comprehension, according to correlation models, silent reading with comprehension testing following seems to be a better way to test comprehension due to the possibility that oral reading may interfere with comprehension in some children.

Another difficulty with the ORF scores was demonstrated when reporting the actual

words read correctly. We did not attempt, the first time we gave the probes, to establish the grade level that the student should be in terms of starting them where they were reading at the 25th percentile according to district norms. We used a rather arbitrary beginning point, their placement on the SORT, as a starting point. As a result, some students' beginning ORF was higher than later because they began at too low of a level and the reading was too easy. It also was difficult to compare ORF scores when students moved up through the levels within one year. Most students were reading passages two or more levels higher than where they began but the scores still only gave the number of words read correctly. This is a problem inherent in the way my district had chosen to report the scores—their form included not only the ORF but also the grade level. This was not something I was able to resolve in reporting the data. Due to the fact, however, that the passages had not been rated for difficulty, as discussed earlier, much of this discussion is moot. The ORF scores tell very little about students' actual fluency in this study because they were not reliable.

In retrospect, I wish that I could have collected more qualitative data and been more concerned about aspects of the study other than instruction and data collection. However, it would be impossible to do justice to both kinds of information in an intervention of this kind and the knowledge I have gained and the experiences that I have had in attempting to understand the quantitative results have been, possibly, more challenging and rewarding.

Further Research and Action Ideas

Time has passed. It has been three years since I initially wrote the proposal for this study. Much to my chagrin, the phonics/whole language war has not really abated. My district has finally “seen the light” and purchased a new curriculum that purports to include PA and phonics. Unfortunately, few of the teachers and administrators have the training and knowledge to know how to implement it completely because they do not know how to teach phonemic awareness and phonics. This particular problem is being addressed but it may take a long time for everyone to have the necessary skills to implement the program effectively.

A balanced approach to literacy is what the research has called for, but, not unexpectedly, balanced literacy has taken on a life of its own: It has been “claimed” by the

meaning-emphasis people and phonics proponents are being warned about catching whole language using the disguise of “balanced instruction” when it’s actually business as usual (Moats, 2000). It’s obvious, we still have a long way to go before we will all be able to agree on this issue. But, it makes one wonder what the meaning-emphasis devotees are so afraid of. All code-emphasis proponents want is to teach phonics, they are not asking that anything else be changed. But first, teachers have to learn how to teach phonics, they need to be experts in the body of knowledge that is called phonics and know how to present that information to children so they can learn it. The problem is—how do we know when they need it? Again, CBM has a fix on an answer with its Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (Kaminski & Good, 1998). DIBELS is an assessment for phonemic awareness and other early literacy skills given to children before they enter kindergarten or first grade. My district has begun assessing children with DIBELS as formative and summative evaluations with good results in that PA is increasing. However, teachers will say that they do not know what they do to increase it—they have not been taught how to teach it, just how to test for it. It’s a start, but the missing ingredient—informed teachers—may be a drawback for a long time.

Recommendations

As a result of conducting this experimental intervention, I have the following recommendations which I will elaborate on next:

- Phonics and fluency training are tools to help children learn to read. It is particularly important for middle school teachers of reading to have these tools at their disposal when working with low-achieving, at-risk students who are having difficulty learning to read. In developing programs for such students, care should be taken to include phonics as a part of a balanced reading program.

- Because phonics is a necessary component of any reading program, pre-service programs should include the teaching of phonics as an element of the preparation of pre-service teachers.

- Teachers should add a phonemic awareness and phonics assessment to their assessment of children’s reading abilities. Most children develop a facility for the linguistic

skills that result in decoding ability; some do not. Phonemic awareness and phonics assessments will quickly reveal deficits in decoding ability and will help form the basis for timely prevention and remediation well before the middle school years.

A Balanced Reading Program. As much as a code-emphasis program seemed to help the students in this study, it became obvious that skills alone were not enough. In addition to all teachers learning and knowing how to present phonemic awareness and phonics information to their students that need it, there does need to be, as well, the time and opportunity for students to practice and apply these skills. Due to the fact that phonics skills were lacking in the district program and in the students' reading skills, I chose to focus on these skills. The time element—one 43-minute class period per day—made it difficult to provide much more than the skills. For students to really benefit from code-based instruction, however, they need to be able to demonstrate their ability to apply these skills and teachers need the opportunity to observe and assist them in that application. In the years following the study, we decided that it was worth the effort to provide adequate time for our students in order to try to increase their reading skills. It is not easy to do this at the middle level because of class size, teacher preparation, and scheduling, but we have proven that it can be done.

Teacher Education. Many of the elements of instruction discussed so far that are required for sound, effective beginning reading instruction such as the mastery of structural language elements (phonemes, syllables, morphemes) have not been designated as critical for teacher competence. Teachers obtain certification without acquiring knowledge of the language content and processes critical to reading and spelling acquisition (Berninger & Abbot, 1994; Moats, 1995a). The lack of emphasis on the relevance of particular language or reading skills necessary for reading mastery, in turn, contributes to inadequate training for most teachers and other professionals concerned with children's reading performance (Lyon, 1995).

Pressley and Rankin (1994) reported on research by El-Dinary & Schuder (1993) and Pressley et al., (1991), that concluded it took teachers several years to become excellent strategies instruction teachers and many teachers who sought to become strategies teachers

did not make it. In a review of the most important recent literature on whole language approaches to reading, Pressley and Rankin (1994) reported on their own study of teachers nominated by their supervisors as outstanding literacy teachers. No novice teachers were nominated in this sample of outstanding primary reading teachers, only middle career or veteran teachers, leading them to presume that becoming an effective literacy teacher was challenging and took time and commitment.

Significant changes must be made in the teacher colleges across the nation and in the in-service opportunities available for current teachers if we are going to correct the problems that are so evident. In a position paper of the International Dyslexia Association, Brady and Moats (1997), argued convincingly that teacher preparation to learn how to teach reading should be a minimum of a year (teachers may now get degrees after having only two classes in reading) encompassing the three components of (1) conceptual foundations of the reading process, (2) knowledge of the structure of language, and (3) supervised practice in teaching reading (see Appendix H for an itemized list of skills to be practiced). A complete curriculum for teacher preparation in reading would include additional valuable courses on teaching writing, on children's literature, on multicultural issues, and on other topics pertinent to literacy. The authors of this position paper postulate that "teaching children to read is a task for an expert, and teacher preparation needs to be comprehensive enough to create such experts" (p. 11). They call this an "Informed Approach" which would allow reading teachers a variety of choices and knowledge as to when and how to use them. A requirement such as this (a full one-year program) would take years to implement but that should not stop colleges of education from beginning the process. Even if we begin now to right some of these wrongs, those hapless children who will slip through our elementary and middle schools before appropriate instruction can be given to them, will surely feel the burden of their lack of skills and knowledge.

Prevention. Identification. Remediation. In addition to furthering the education and training of our teaching professionals involved in the reading instruction of our children, we also must become more proactive in the identification, prevention, and remediation of children with learning problems. We know now that phonemic awareness can predict those

who can learn to read by any method (Lieberman et al., 1989) so we must have an all-out effort to screen young children and not insist, as has been the case recently, that they fail to learn through the adopted method before we try something else. It seems safe to say that there would be no harm and probably great benefit if all children had early and intensive phonemic awareness training as well as training in systematic, explicit phonics (Giacomini, 1992). It would not be necessary to make all children go through a lock-step approach. It should be possible to determine who has the natural ability or experiences in these areas and who does not and to provide accordingly.

Identification and diagnosis of reading disabilities also will need to be disentangled from the intelligence-performance discrepancy model. It seems that all children, intelligent or not, who have difficulty in learning to read require the same kind of training due to a lack of phonological processing ability. This skill is both an inherited as well as an acquired trait. If a student is unfortunate enough to have the acquired disability in language sound processing, no time should be wasted in providing the intensive instruction now known to be the only recourse. If a child potentially has an ability in language processing but has not had the environmental experiences to bring it to an appropriate level, then, too, we must not delay. What these children do not learn in the first four or five years of life, they do not have time to receive in the way they should have. They may now need direct, systematic instruction to make up for lost time.

Based on their own research and that of others, Vellutino et al., (1996) have come to the conclusion that

to render a diagnosis of specific reading disability in the absence of early and labor-intensive remedial reading that has been tailored to the child's individual needs is, at best, a hazardous and dubious enterprise. One can increase the probability of validating the diagnosis if one combines impressions and outcomes derived from early, labor-intensive, and individualized remediation with results of relevant psychological and educational testing in evaluating the etiology of a child's difficulties in learning to read. (p. 632)

It becomes obvious that early detection, prevention and remediation of phonological

processing difficulties such as phonemic awareness, phonics, and fluency should take the forefront.

This study may do nothing to prove to others what works and what doesn't when it comes to reading instruction. However, the processes I went through in order to develop the knowledge to implement, assess, and analyze the intervention should not be relegated to doctoral students but should be common knowledge to all who teach our children to read. It may be our only hope for the health of our children and our nation.

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Appendix A
Examples of Spelling Growth Through CBM Measurement
Using the Morrison-McCall (Morrison & McCall, 1951) Spelling List 1
in September 1999 and in May 2000

The following are examples of three students' spelling tests, one given at the beginning of the school year, the other given at the end. Each set of words will be (1) written correctly (2) as the student spelled them both times, and (3) with the CBM correct letter sequence score. The total possible points for each word will be given after the number of points the student received. The purpose of showing these words and scores is to demonstrate actual spelling development that can be assessed and evaluated using the CBM method which gives credit for increased ability to isolate and write beginning, medial, ending, etc. sounds instead of the Morrison-McCall method of counting only correct spellings. A symbol (^) shows where the point for each CLS was given.

**Student #2--Female,
English Language Learner (ELL) , Initial Reading Level (IRL) 1**

Actual Words	<u>September</u>		<u>May</u>	
	<u>Pretest</u> Student Spelling	CBM points earned/ possible	<u>Posttest</u> Student Spelling	CBM points earned/ possible
run	gruen _h	2/4	run	4/4
top	tap _h	2/4	top	4/4
red	gruet	0/4	red	4/4
book	bok _h	3/5	book	5/5
sea	si _h	1/4	sea	4/4
play	pleet	2/5	play	5/5
lay	ley _h	2/4	ley _h	2/4
led	letd _h	3/4	lead _h	3/4
add	etd _h	1/4	ad _h	2/4
alike	halayk	1/6	I like _h	4/6
mine	mayn _h	1/5	mine	5/5
with	buef	0/5	with	5/5
easy	ici	0/5	ease _h	3/5
shut	chats	0/5	shat _h	3/5
done	deanat	1/5	done	5/5
body	vari	0/5	bany _h	2/5
anyway	eniguey _h	1/7	anyway	7/7
omit	hoymet _h	1/5	oment _h	3/5
fifth	fesf _h	1/6	fest _h	1/6
reason	gruicen _h	1/7	ricen _h	2/7
perfect	profets	2/8	perfect	8/8
friend	freend _h	5/7	friend	7/7
getting	catin	2/8	cating _h	4/8
nearly	neulni	2/7	nearly	7/7
desire	disairo	2/7	disayor	1/7
arrange	agruench	1/8	arunch	2/8
written	grueten _h	3/8	riten _h	4/8
search	sorch _h	4/7	sartch _h	4/7
popular	papielor _h	2/8	popular	8/8
interest	entrues	2/8	enterast _h	5/8
pleasant	plence	3/9	plisent _h	5/9
therefore	defor	3/10	therefore	10/10
folks	foux	2/6	focks _h	4/6
celebration	sailorbruechen _h	2/12	selebration _h	10/12
minute	menex _h	1/7	minute	7/7
Total		27%		72%
		Correct		Correct

Student #2, a female Hispanic who was just learning English, achieved 27% of the possible points on the pretest and 72% of the possible points on the posttest. It is very apparent that she improved not just in spelling (she went from no words correct to 16 words correct which is a 3.3 grade level by the end of the year) but in phonemic awareness and knowledge of sound/symbol relationships in English. A note was written on the pretest to check to see if she were writing the words in Spanish because they were so far off. Her use of "gr" when spelling /t/ during the pretest is difficult to understand.

**Student #11--Male,
Resource (RES), Initial Reading Level (IRL) 1**

Actual Words	September		May	
	Pretest Student Spelling	CBM points earned/ possible	Posttest Student Spelling	CBM points earned/ possible
run	run	4/4	run	4/4
top	tope	3/4	top	4/4
red	red	4/4	rad	2/4
book	book	5/5	book	5/5
sea	sea	4/4	sea	4/4
play	play	5/5	play	5/5
lay	lawe	2/4	lay	4/4
led	lead	3/4	led	4/4
add	add	4/4	add	4/4
alike	alike	6/6	alike	6/6
mine	mine	5/5	mjan	2/5
with	withe	4/5	with	5/5
easy	easy	5/5	easy	5/5
shut	shoute	3/5	shut	5/5
done	done	5/5	done	5/5
body	bodie	3/5	body	5/5
anyway	inaway	3/7	anyway	7/7
omit	omate	2/5	omeat	3/5
fifth	fiveth	4/6	fiveth	4/6
reason	resune	2/7	reason	7/7
perfect	proofet	3/8	perfect	8/8
friend	frinde	4/7	friend	7/7
getting	getting	8/8	getting	8/8
nearly	nerly	5/7	neraly	4/7
desire	desier	4/7	desier	4/7
arrange	aringe	5/8	areng	3/8
written	writen	6/8	written	8/8
search	surech	3/7	surche	3/7
popular	populer	6/8	popular	8/8
interest	inteste	5/8	intruse	3/8
pleasant	plasant	5/9	placent	4/9
therefore	thereforr	8/10	therefor	8/10
folks	fokes	3/6	fokes	3/6
celebration	seabreshon	3/12	selabrasion	6/12
minute	minet	3/7	minute	5/7
Total:		67%		75%

Student #11, a male resource student, only went from 67% to 75% of the possible points but did demonstrate an increased ability in attempting to address all sounds and syllables in words. He doubled the number of words spelled correctly (11 to 22) from the pretest to the posttest.

**Student #12--Male,
Resource (RES), Initial Reading Level,(IRL) 1**

Actual Words	September		May	
	Pretest Student Spelling	CBM points earned/ possible	Posttest Student Spelling	CBM points earned/ possible
run	run	4/4	run	4/4
top	top	4/4	tap	2/4
red	rad	2/4	red	4/4
book	book	5/5	book	5/5
sea	sea	4/4	sea	4/4
play	play	5/5	play	5/5
lay	lae	2/4	lay	4/4
led	lad	2/4	lad	2/4
add	aead	2/4	add	4/4
alike	alike	6/6	alike	6/6
mine	naming	2/5	mane	3/5
with	wyhat	1/5	whith	4/5
easy	esey	2/5	esy	3/5
shut	chot	1/5	sat	2/5
done	bon	1/5	bon	1/5
body	bady	3/5	bady	3/5
anyway	anew	2/7	anynway	6/7
omit	onat	2/5	onit	3/5
fifth	fat	1/6	faith	3/6
reason	rasn	3/7	resin	3/7
perfect	prft	3/8	refat	3/8
friend	famand	3/7	friend	7/7
getting	gating	5/8	geting	6/8
nearly	narle	3/7	nerley	4/7
desire	besare	3/7	beire	3/7
arrange	aragas	2/8	areng	3/8
written	ratin	1/8	rition	3/8
search	srsh	2/7	siek	1/7
popular	palere	1/8	populaer	7/8
interest	inrast	4/8	intesas	4/8
pleasant	plint	4/9	plasant	5/9
therefore	thofo	3/10	therefor	8/10
folks	focs	3/6	favs	2/6
celebration	salarin	1/12	silavasi	0/12
minute	mait	1/7	milt	2/7
Total:		42%		57%

Student #12, a male resource student, was also bilingual. However, he was not in the ELL program because he did not qualify due to his command of oral English and the amount of time he had been in the United States. By the end of the year, this student was placed in the next lower resource program, Developmental Learning Program (DLP). He achieved an increase of 15% in his percentage of possible CBM points (42% to 57%) but only spelled two more words correctly from the beginning of the year to the end on the same list (6 words to 8 words).

Appendix B
Summary Charts of Reading Research Questions

SUMMARY OF STUDIES AND ARTICLES REGARDING READING INSTRUCTION QUESTIONS

<u>QUESTION</u>	<u>STUDY OR ARTICLE</u>	<u>SUMMARY OF FINDINGS</u>
<u>Specific Reading Instruction Questions</u>		
1. Is reading an innate or developmental process?	Bruck, 1990; Chall, 1992; Lyon & Chhabra, 1996; Pressley & Rankin, 1994; Thompson, 1992; Westby & Costlow, 1991.	Reading does not appear to be an innate ability or we would not have languages without a script or illiteracy. Reading does appear to be an aptitude or talent with a normal distribution of this aptitude among a population.
2. Is meaning or decoding the purpose of beginning reading instruction?	Beck & Juel, 1995; Chall, 1967; Lyon, 1995; Lyon & Chhabra, 1996; Lyon & Moats, 1997; Moats & Lyon, 1993; Stanovich, 1994.	Although construction of meaning is why we teach reading, relating information from a page of print to prior knowledge is exceedingly difficult to do if the text cannot be deciphered quickly, automatically, and effortlessly. The key to meaning, therefore, is the immediate and accurate recognition of a single written word. Comprehension fails not because of over-reliance on decoding, but because decoding skill is not developed enough.
3. Is word recognition best accomplished through context or decoding?	Corley, 1988; Cunningham, 1992; Ehri, 1994; Goodman, 1996; Lyon & Chhabra, 1996; Pressley & Rankin, 1994; Stanovich, 1994; Stanovich, West, & Feeman, 1981; Vellutino et al., 1994.	Although it may appear that proficient readers do not recognize every word, in fact, they do read every word and see every letter. It is actually the less-skilled readers who were more dependent upon context

SUMMARY OF STUDIES AND ARTICLES REGARDING READING INSTRUCTION QUESTIONS

<u>QUESTION</u>	<u>STUDY OR ARTICLE</u>	<u>SUMMARY OF FINDINGS</u>
4. Is implicit or explicit instruction of sound-symbol relationships most effective?	Adams, 1990; Ball & Blachman, 1991; Beck & Juel, 1995; Chall, 1983; Delpit, 1988; Fielding-Barnsley, 1997; Foorman et al. 1991; Lovett et al., 1989; Pressley & Rankin, 1994; Smith & Goodman, 1971; Vellutino et al., 1996; Williams, 1980.	for word recognition because they rely on context in an attempt to compensate for poor decoding skills. Attempting to use context as a strategy to aid the recognition of unknown words actually hampers rather than helps individuals with reading disability because they allocate even more effort to decoding at the expense of comprehension. The ability to predict identities of words based on syntax and semantics will facilitate accurate identification of only one out of every four words encountered in the text. Unless readers learn to decode and recognize single words rapidly, accurately, and fluently, information will not be easily available to them through print. Explicit phonics gets better results for more children more rapidly. Although many children can learn to read and use the code if the instruction emphasizes word families, 15-20 percent must have explicit teaching at the individual sound-symbol level to progress. In implicit phonics the sounds of individual letters are never pronounced in isolation. A child is expected to induce

SUMMARY OF STUDIES AND ARTICLES REGARDING READING INSTRUCTION QUESTIONS

<u>QUESTION</u>	<u>STUDY OR ARTICLE</u>	<u>SUMMARY OF FINDINGS</u>
5. Should decoding be taught at the syllable or phoneme level?	Bruck & Treiman, 1992; Ehri & Robbins, 1992; Goswami, 1988, 1990; Lovett, Borden, DeLuca, Lacerenza, BHenson, & Brackstone, 1994; Olson & Wise, 1992; Roberts, 1996; Torgesen et al., 1992.	<p>these sounds from reading words in stories and lists that contain similar spelling-sound patterns. Many children fail to induce the sounds because they are unable to segment a word into distinctive sounds. There is no substance to the long-held belief that pronouncing sounds in isolation is detrimental. Without explicit instruction, minority students are being denied access to information needed for success in mainstream society. The prevailing conclusion seems to be that isolating sounds offers an advantage when it is done in moderation and when it includes good blending instruction.</p> <p>Some children can learn to read and extrapolate from instruction at the syllable or rime-onset level but this is not sufficient for all beginning readers. Children need instruction not just on the relations between groups of graphemes and groups of phonemes but also on the correspondences between single graphemes and single phonemes. Children may succeed in using analogical strategies to process larger orthographic units only when they know something about the</p>

SUMMARY OF STUDIES AND ARTICLES REGARDING READING INSTRUCTION QUESTIONS

<u>QUESTION</u>	<u>STUDY OR ARTICLE</u>	<u>SUMMARY OF FINDINGS</u>
6. Should instruction be with authentic or decodable text?	Adams, 1990; Chall, 1992; Cunningham, 1992; Goodman, 1986; Spalding, 1986.	correspondences between single phonemes and single graphemes. Authentic, excellent literature will always have a place in reading instruction; however, most children do not learn to read from being read to. Children are not as concerned as adults about the content of what they are reading, they just want to be able to read on their own. Especially those children who struggle with the basics of reading such as phonemic awareness and phonics, explicit practice with newly learned phonic principles is essential. With enough practice, children can readily move on to the more literary selections, but without extensive practice, many children may not learn as quickly to become independent readers and will depend longer on someone else to do their reading for them.

SUMMARY OF STUDIES AND ARTICLES REGARDING READING INSTRUCTION QUESTIONS

<u>QUESTION</u>	<u>STUDY OR ARTICLE</u>	<u>SUMMARY OF FINDINGS</u>
<u>General Instructional Methods Questions</u>		
1. Is the most effective instruction accomplished by focusing on strengths or weaknesses?	Fielding-Barnsley, 1997; Goodman, 1996; Lovett et al., 1989; Lyon & Chhabra, 1996; Torgesen et al., 1992	While it makes sense to build a child's confidence by not dwelling on his or her weaknesses, most children do have weaknesses that need to be strengthened and they need systematic help in overcoming those weaknesses. If children with learning disabilities are not identified and provided with intervention before reaching nine years of age, at least 74% of them will remain disabled.
2. Are strategies or skills what students require most?	Chall, 1992; Goodman, 1989b; Lovett et al., 1989, 1994; Meltzer, 1994; Moats, 1995a; Torgesen et al., 1992.	A skill is an unconscious, automatic process whereas a strategy is defined as a process that is consciously devised to achieve a particular goal. Children with few automatic skills are less likely to be able to apply strategies when needed. Because of the noticeable difficulty in applying strategies, strategy learning has become a means of remediation for disabled learners. However, the underlying skills component appears to be the deciding factor as to whether a child can actually use

SUMMARY OF STUDIES AND ARTICLES REGARDING READING INSTRUCTION QUESTIONS

<u>QUESTION</u>	<u>STUDY OR ARTICLE</u>	<u>SUMMARY OF FINDINGS</u>
3. Should instruction be through the inclusion model or in ability groups?	Delpit, 1988; Lyon & Chhabra, 1996; Mather, 1992; Moats, 1994; Pressley & Rankin, 1994 Reyes, 1991.	<p>strategies, therefore, skills training may be the most important aspect of a child's education but not to the exclusion of strategy instruction.</p> <p>There is some doubt as to whether inclusionary models can provide the critical elements of intensity and the appropriate duration of instruction for the learning disabled. Teachers must have expertise in multiple teaching methods and in accommodating individual learning differences. While it would not be appropriate to isolate learning disabled students all day long, it may be necessary to provide a pull-out type of reading program or some kind of grouping in order for the learning disabled student to not be an educational casualty. Disadvantaged and minority students tend to require this type of service most because they are not as likely to have additional instruction provided by parents through tutors or the parents themselves. Too often, schools with higher percentages of disadvantaged and minority students spend less time than other schools in reading instruction when what is needed is more time. In addition, the</p>

SUMMARY OF STUDIES AND ARTICLES REGARDING READING INSTRUCTION QUESTIONS

<u>QUESTION</u>	<u>STUDY OR ARTICLE</u>	<u>SUMMARY OF FINDINGS</u>
4) Does direct instruction or a discovery model provide the most success?	Delpit, 1988; Goodman, 1989b; Peterson, 1979; Pressley & Rankin, 1994; Reyes, 1991; Smith & Goodman, 1971; Westby & Costlow, 1993.	<p>paraprofessionals paid out of federal Chapter 1 funds are usually used to monitor the behavior of low-achieving youngsters allowing the classroom teacher to work with the better readers which benefits the teacher and higher achieving students rather than the students for which this program is provided. Too often, external funds from state and federal sources replace local effort rather providing additional services.</p> <p>Reviewing 117 studies, Peterson found that traditional, direct methods of instruction tend to provide the best results in improving scores in reading and mathematics. Although some children can learn from immersion or discovery methods, most students profit best from direct instruction and some can not learn without it. Students with learning disabilities, those who are economically and socially disadvantaged, those who are culturally and linguistically diverse benefit from direct instruction. Otherwise these students are held accountable for knowing rules that no one has ever taught them. The</p>

SUMMARY OF STUDIES AND ARTICLES REGARDING READING INSTRUCTION QUESTIONS

QUESTION

STUDY OR ARTICLE

SUMMARY OF FINDINGS

“best teachers” understand the need to tailor instruction and to provide more direct instruction no matter what philosophy may be promoted at their schools. These teachers provide authentic literacy experiences as they build the skills permitting ever more effective participation in more demanding literacy experiences.

Appendix C
Titles of Computer Programs, Games, Manipulatives, and Materials
for Intervention Study

Computer Programs, Games, Manipulatives, and Materials for Intervention Study

Programs for Apple IIe (*MECC, 1986)

Blends and Digraphs*	Vowels I & II*
Prefix Power*	Suffix Sense*
Compound It!*	Contraction Action*
Reading Machines I, II, III, & IV*	Clock Works*
Path Tactics*	Solar Reading*
Baseball Vocabulary*	Word Munchers*
Magic Castle Red & Blue (Stoneham, MA: Methods & Solutions, Inc.)	

Programs for Macintosh

Ultimate Speed Reader ((Davidson, 1997)	Word Attack (Davidson, 1996)
Spelling Blizzard (Bright Star Technology, 1998))	Reading Galaxy (Broderbund software, 1996)
Reader Rabbit I & II (The Learning Co., 1998)	Spell It Deluxe (Davidson, 1997)
Kid Phonics (Davidson & Assoc., Inc. 1996)	Simon Spells (Don Johnston, Inc., 1996)
Simon Sounds It Out (Don Johnston, Inc. 1996)	
NFL Reading (Sanctuary Woods Multimedia, 1996)	

Games and Manipulatives

Phonemic Awareness with colored squares	Magnet Boards w/ magnetic letters
1000 Words with colored chips	Easy Vowel Cards (Frank Schaffer, Pub. Inc, 1988)
White board class set	Check Yourself Flip-Overs (Bryan Haines, Inc., 1995)
Word Scramble & Sentence Sequencing (LinguiSystems, East Moline, IL, 1998)	Boggle (Parker Bros., 1976)
Scrambled Sentences (Nancy E. Walentas, 1998)	
Think-It-Through Tiles (Educational Teaching Aids, 1990)	

Books, Stories, and other Materials

Decodable Texts (McGraw-Hill Book Co., 1966)	The Honey Hunt (Stanley & Janice Berenstain)
One Fish, Two Fish (Dr. Seuss)	The Cat in the Hat (Dr. Seuss)
The Ear Book (Al Perkins)	Fastback Book Series (Fearon, 1987)
The Cat in the Hat Comes Back (Dr. Seuss)	That's Life! Reading Comprehension (LinguiSystems, 1998)
The Day Dad Cried (6 short stories) (Perfection Form 1984)	Phonics Worksheets
McCall-Crabb Primary and Comprehension Stories (Teachers College Press, 1979)	Spelling Lessons (http://www.mcdougallitell.com/lit/spelling/gr7toca.htm)

Appendix D
Consent Forms in English and Spanish for
Students and Parents of Students
Participating in the Study



University of
Nebraska
Lincoln

Department of Educational Administration
513 Nebraska Hall
P.O. Box 880558
Lincoln, NE 68588-0558
(402) 472-3726
FAX (402) 472-4300

PARENTAL INFORMED CONSENT FORM IRBAPP#99-10-056EX

THE EFFECT OF A MULTISENSORY, DIRECT INSTRUCTION IN PHONEMIC AWARENESS, PHONICS, AND FLUENCY PROGRAM ON READING, SPELLING, AND WRITTEN EXPRESSION SCORES OF LOW-ABILITY SEVENTH GRADE STUDENTS

You are invited to permit your child to participate in this research study. The following information is provided in order to help you to make an informed decision whether or not to allow your child to participate. If you have any questions please do not hesitate to ask.

Your child is eligible to participate in this study because your child is in seventh grade and has an Individual Education Program (IEP) for reading or is in English as a Second Language (ESL).

The purpose of this study is to try to learn how best to teach reading to middle schools students who are reading below grade level.

The study will continue throughout the 1999-2000 school year. Tests used in the comparison of progress are approved by the school district. No student will be identified by name in the reporting of the results of this study. The data for the study will be maintained for 2 years and will then be destroyed.

I will need your written consent and the consent of your student to use the test results of your child for this study. If at any time you would like to withdraw your consent, you may do so without affecting the study or your child's relationship with me, other teachers, the principal, the Grand Island school district, or the University of Nebraska. A decision not to allow your student's scores to be used in the results of the study will not alter the kind of instruction your student will receive.

There are no known risks associated with this research.

As a result of participation in this research, it may make it possible to see if middle school students who are behind in their reading development can be helped by using a direct, systematic method of reading instruction.

You may ask any questions concerning this research and have those questions answered before agreeing to allow your child to participate or at any time during the study. You may call me at 385-5990 (school) or at 384-5456 (home). You may call Miles Bryant, the secondary investigator, with questions. If you have any questions about your rights, or your child's right as a research subject, you may also call the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965.

FORMA DE CONSENTIMIENTO INFORMADO PARA PADRES

IRBAPP # 99-10-056EX

EL EFECTO DE UN PROGRAMA MULTISENSORIAL, CON INSTRUCCION DIRECTA EN CONOCIMIENTO DE FONEMICO, FONETICA, Y FLUIDEZ SOBRE EL PUNTAJE DE ESTUDIANTES DE 7 GRADO DE BAJA HABILIDAD EN LECTURA, ORTOGRAFIA, Y EXPRESION ESCRITA

Usted está invitado a permitir a su hijo a participar en éste estudio de investigación. La siguiente información se provee como ayuda para que haga una decisión informada si permite o no permite a su hijo a participar. Si tiene cualquier pregunta por favor no se detenga en preguntar.

Su hijo es elegible para participar en éste estudio por que su hijo está en el 7 grado y tiene un Programa Individual para Educación (IEP) para lectura o está en Ingles como Segundo Lenguaje (ESL).

El propósito de éste estudio es poder entender cómo es la mejor manera de enseñar la lectura a los estudiantes de las escuelas medias que están leyendo bajo el nivel de su grado.

El estudio continuará a través del año escolar de 1999-2000. Los exámenes que se usarán para comparar el progreso son aprobados por el distrito escolar. Ninguno de los estudiantes será identificado por nombre cuando se reporten los resultados de éste estudio. Los datos del estudio se mantendrán por 2 años y entonces se destruirán.

Necesitaré tu consentimiento por escrito y el consentimiento de su estudiante para usar los resultados del examen de tu hijo para éste estudio. Si a cualquier tiempo te gustaría retirar tu consentimiento, lo puedes hacer sin afectar el estudio o la relación entre tu hijo y yo, otros maestros, el principal, el distrito escolar de Grand Island, o la Universidad de Nebraska. La decisión de no permitir el puntaje de tu estudiante para uso en los resultados de éste estudio no alterarán el tipo de instrucción que tu estudiante recibirá.

No hay riesgos conocidos asociados con ésta investigación.

Como resultado de la participación en ésta investigación, se podrá hacer la posibilidad de ver si los estudiantes de las escuelas medias que están atrasados en su desarrollo de leer se les puede ayudar al usar un método sistemático, directo, de instrucción de lectura.

Usted puede hacer cualquier pregunta acerca de ésta investigación y tener esas preguntas contestadas antes de estar en acuerdo de permitir a su hijo a participar o a cualquier tiempo durante el estudio. Usted me puede hablar a 385-5990 (escuela) o a 384-5456 (casa). Usted le puede hablar a Miles Bryant, el segundo investigador, con preguntas. Si usted tiene preguntas sobre sus derechos, o los derechos de su hijo como un sujeto de investigación, usted también puede llamar a la Junta Revisora Institucional de la Universidad de Nebraska-Lincoln a (402) 472-6965.

Por favor firme esta forma indicando que usted está en acuerdo que el puntaje de los exámenes de su hijo se pueden usar en los resultados de éste estudio. Lea la forma de asentimiento (consentir a algo) con su hijo y que él o ella firme la forma. Regrese las dos formas en el sobre que está incluido. Si usted no está en acuerdo, por favor regrese las formas. Si yo no recibo ésta forma, yo les contactaré personalmente para determinar si puedo o no puedo usar el puntaje de su hijo.

Ustedes recibirán para guardar una copia de esta hoja firmada y la forma de su hijo.

(Firma de Padre)

(Fecha)

**Geri Marshall
Miles Bryant, Ph.D.**

**Investigadora Primaria
Investigador Secundario**

(308) 385-5990

(402) 472-0960



**University of
Nebraska
Lincoln**

Department of Educational Administration
513 Nebraska Hall
P.O. Box 880558
Lincoln, NE 68588-0558
(402) 472-3726
FAX (402) 472-4300

CHILD ASSENT FORM

IRBAPP#99-10-056EX

THE EFFECT OF A MULTISENSORY, DIRECT INSTRUCTION IN PHONEMIC AWARENESS, PHONICS, AND FLUENCY PROGRAM ON READING, SPELLING, AND WRITTEN EXPRESSION SCORES OF LOW-ABILITY SEVENTH GRADE STUDENTS

We would like to invite you to take part in this study. We are asking you because you have difficulty reading.

In this study you will either be part of a treatment group or part of a control group. In the treatment group (students at Walnut Middle School), students will be grouped for reading and will be taught using a method of reading using phonics. The control group (students at Barr Middle School and Westridge Middle School) will be taught reading using the regular reading curriculum as set forth by the district. The reason we are doing this study is to see if there are better ways to help students who are having difficulty with reading in their middle school years. Students at all schools will take the same kinds of tests and only the test results will be used in writing up the study. Your name will not be used.

Your parents will also be asked to give their permission for you to take part in this study. Please talk this over with your parents before you decide whether or not to allow your test scores to be used.

You do not have to let us use your test scores for this study if you do not want to. If you decide to participate in the study, you can stop at any time.

If you have any questions at any time, please call the researchers at the numbers given below.

If you sign this form it means that you have decided to participate and understand everything that is on this form. You and your parents will be given a copy of this form to keep.

(Signature of Child)

(Date)

Please return this form in the enclosed envelope.

**Geri Marshall, Primary Investigator
Reading Specialist, Walnut Middle School
385-5990 (work)
384-5456 (home)**

**Miles Bryant, Ph.D.
Secondary Investigator**



IRBAPP#99-10-056EX

FORMA DE ASENTIMIENTO DE PARTE DEL NIÑO

EL EFECTO DE UN PROGRAMA MULTISENSORIAL, CON INSTRUCCION DIRECTA EN CONOCIMIENTO DE FONEMICO, FONETICA, Y FLUIDEZ SOBRE EL PUNTAJE DE ESTUDIANTES DE 7 GRADO DE BAJA HABILIDAD EN LECTURA, ORTOGRAFIA, Y EXPRESION ESCRITA

Nos gustaría invitarte a tomar parte en este estudio. Te pedimos esto por que tu estás teniendo dificultad en la leyendo.

En este estudio tu serás parte de un grupo en tratamiento o parte de un grupo en control. En el grupo de tratamiento (los estudiantes de Walnut Middle School), los estudiantes estarán en grupos para leer y les enseñarán usando un método de lectura usando la fonética. El grupo de control (los estudiantes de Barr Middle School y de Westridge Middle School) les enseñarán a leer usando el programa regular de lectura puestos por el distrito. La razón por éste estudio es para ver si hay maneras mejores de ayudar a los estudiantes que están teniendo dificultad con leyendo en sus años de la escuela media. Los estudiantes de todas las escuelas tomarán los mismos tipos de exámenes y solamente los resultados de los exámenes se usarán al escribir el estudio. Tu nombre no se usará.

También, se les pedirá a tus padres el permiso para que tú tomes parte en éste estudio. Por favor habla con tus padres antes de decidir si permites o no permites los resultados / puntaje de tus exámenes a que se usen.

Tu no tienes que permitimos el uso del puntaje de tus exámenes para éste estudio si tu no quieres. Si tu decides a participar en éste estudio, tu puedes dejar de participar a cualquier tiempo.

Si tu tienes preguntas a cualquier tiempo, por favor hablales a los investigadores en los números escritos abajo.

Si tu firmas ésta forma quiere decir que tu haz decidido a participar y que entiendes todo lo que está en esta forma. Tu y tus padres recibirán una copia de esta forma para guardar.

(Firma de Hijo)

(Fecha)

Geri Marshall, Investigadora Primaria
Especialista en Lectura, Walnut Middle School
385-5990 (trabajo)
384-5456 (casa)

Miles Bryant, Ph.D.
Investigador Secundario

Appendix E
Table 1--Descriptive Statistics of Students
Subgroups, Raw Score Ranges

Individual students are identified in this table by a number, their gender, their handicapping condition (H-C) (RES = student in resource education program; DLP = student in Developmental Learning Program; ELL = student in the English Language Learners program), and the initial reading level (IRL) they were in when instruction began.

The pre- and posttest scores of the Total Reading Scores (TRS) from the SDRT and Words Read Correctly (WRC) from the SORT are presented for each student. In the next three columns, the range of scores from the three other measurements are given: Correct Letter Sequence (CLS), Words Spelled Correctly (WSC), and Oral Reading Fluency (ORF) scores. In order to be included in the study, all students had at least five data points (tests were usually given monthly) in each of the three final variables.

Table 1**Descriptive Data for Individual Students with Range of Scores for TRS, WRC, CLS, WSC and ORF**

Student	Gender	H-C	IRL	TRS Pre-post	WRC Pre-post	CLS % Range	WSC Range	ORF Range
1	M	DLP	2	NA	42-55	39-64	8-13	27-51
2	F	ELL	1	NA	15-113	27-72	0-20	44-95
3	F	ELL	2	15.4/29.1	80-141	66-84	15-23	101-153
4	M	RES	2	13.1/17.3	64-130	73-78	14-20	46-76
5	M	RES	3	NA	65-73	50-67	12-16	48-81
6	F	ELL	1	NA	39-86	48-73	6-21	58-76
7	M	RES	2	6.7/18.39	76-78	59-87	15-21	64-106
8	F	ELL	3	18.9/24.2	80-107	58-75	13-20	68-92
9	F	RES	2	13.1/15.1	86-98	63-77	16-21	71-90
10	F	RES	3	NA	50-77	61-75	13-19	63-84
11	M	RES	1	NA	72-90	63-75	11-22	55-81
12	M	RES	1	16.7/10.4	24-35	35-57	7-11	7-41
13	F	DLP	2	NA	26-39	30-55	7-13	10-25
14	M	RES	2	10.4/15.4	62-96	53-84	12-20	59-83
15	F	RES	3	10.4-15.4	64-103	53-78	10-16	48-77
16	F	RES	3	NA	96-120	60-69	17-23	73-100
17	M	ELL	3	18.9-29.1	109-137	53-72	15-25	81-131
18	M	RES	3	27.2-24.2	89-102	54-64	11-16	61-78
19	F	ELL	3	15.4-24.2	84-108	68-77	21-30	77-113
20	F	RES	3	18.9-49.5	125-157	73-81	21-28	78-131
21	M	ELL	3	23.0-31.5	141-152	74-84	25-33	106-137
22	M	ELL	3	27.2-31.5	94-124	62-87	20-33	75-113
23	F	RES	3	25.3-24.2	96-110	63-72	19-30	70-92
24	F	RES	3	27.2-31.5	91-143	54-73	18-22	61-79
25	M	RES	3	24.2-36.5	107-140	37-66	16-24	86-121

Note: Ranges for TRS were not available (NA) for these students because they did not take the SDRT the year prior to the study. H-C=Handicapping Condition; DLP=Developmental Learning Program; RES=Resource Program; ELL=English Language Learners; TRS=Total Reading Score on SDRT; WRC=Words Read Correctly on SORT; CLS=Correct Letter Sequence % for PA; WSC=Words Spelled Correctly; ORF=Oral Reading Fluency

Appendix F
Sample Pages from The Spelling Notebook
Used in the Intervention

The following pages are copies or examples of pages taken from the Spelling Notebook used in the current intervention study. The notebook is based on materials used in the Spalding Method (Spalding, 1986) but adapted for this study with middle level students. In the Spalding Method, students are given a blank notebook and write most things in it themselves. In order to save time, I word-processed many of the pages, leaving blanks for students to fill in.

The first page (p. 196) is the list of 70 phonograms the students learn in the program. They are in the order presented and grouped according to certain principles.

The next page (p. 197) is a list of the 29 spelling rules students learn when using the Spalding Method.

The next page (p. 198) is a list of the marking checkpoints students follow when entering spelling words and their markings into the notebook.

The next page (p. 199) is a page that presents a chart of “The Terrible 10”—phonograms that are difficult to remember because they make the same sounds. There are 5 pairs, one that we do use at the end of English words, one that we do not use at the end of English words (with some exceptions). This chart was posted all over the room for students to use. In addition, the page had the “er” phonograms—the five phonograms that all make the /er/ sound. The students learn the nonsense sentence Her first nurse works early in order to help them remember which spelling to use in words.

The next page (p. 200) is a chart that lists the five jobs of the Silent Final E. Students use this information when marking their spelling words.

The next page (p. 201) is a sample of a page of spelling words with their markings, given over a two-week period.

The last page (p. 202) is a sample page of one student’s answers for the McCall-Crabb Comprehension Stories that was included in the section titled “Reading Check.”

PHONOGRAMS

196

a	n	sh	oo	ey
c	p	ee	ch	eigh
d	r	th	ng	ei
f	t		ea	igh
g	u	ay	ar	ie
o	v	ai	ck	kn
s	w	ow	ed	gn
qu	x	ou	or	wr
b	y	aw	wh	ph
e	z	au	oa	dge
h		ew		oe
i	er	ui		tch
j	ir	oy		ti
k	ur	oi		si
l	wor			ci
m	ear			ough

SPELLING RULES

- Rule 1.** The letter q is always written with two letters -qu- when we say "kw."
- Rule 2.** The letter c before e, i or y says "c."
- Rule 3.** The letter g before e, i or y may say "g."
- Rule 4.** Vowels a, e, o, u may say "a," "e," "o," "u" at the end of a syllable. (This is one of the three ways a vowel may say its name - the long vowel sound.)
- Rule 5.** Vowels i and y can say "i" at the end of a syllable, but they usually say "i."
- Rule 6.** Vowel y, not i, is used at the end of an English word.
- Rule 7.** There are five kinds of silent final e's. (See page in notebook.) The first rule (time) is one of the three ways a vowel can say its name (the long sound).
- Rule 8.** or may say "er" when w comes before or.
- Rule 9.** We use "er" after c, if we say "a", and in some exceptions.
- Rule 10.** sh is used at the beginning of a word, at the end of a syllable, but not at the beginning of any syllable after the first one, except for the ending ship.
- Rule 11.** ti, si, and ci are used to say "sh" at the beginning of any syllable after the first one.
- Rule 12.** si is used to say "sh" when the syllable before it ends in an s (ses sion) and when the base word has an s where the base word changes. (tense, ten sion)
- Rule 13.** Only si can say "zh."
- Rule 14.** A one-syllable word ending in one consonant, having one vowel before it, doubles the last consonant when adding an ending beginning with a vowel.
- Rule 15.** A two-syllable word, with the second syllable ending in one consonant, having one vowel before it, doubles the last consonant when adding a vowel suffix, if the accent is on the last syllable. (begin, beginning)
- Rule 16.** Silent final e words are written without the e when adding an ending beginning with a vowel.
- Rule 17.** We often double l, f, s after a single vowel at the end of a one-syllable word.
- Rule 18.** Base words do not end with the letter a saying its name, except for the article a; ay is used most often.
- Rule 19.** Vowels i and o may say "i" and "o" when followed by two consonants. (This is one one of the three ways a vowel can say its name.) (find, old)
- Rule 20.** s never follows x. There is an "s" sound in "x."
- Rule 21.** All is written with one l when added to another syllable. (already)
- Rule 22.** When till and full are added to another syllable only one l is written.
- Rule 23.** Three-letter "dge" may be used only after a single vowel which says a, e, i, o, u.
- Rule 24.** When adding an ending to a word that ends with y that has a sound alone, change the y to i unless the ending is ing. (carry—carrying)
- Rule 25.** Two-letter "ck" may be used only after a single vowel which says a, e, i, o, u.
- Rule 26.** Words which are the individual names of titles of people, places, books, days, months, etc. are capitalized.
- Rule 27.** z, never s, is used to say "z" at the beginning of a base word. (zoo)
- Rule 28.** "ed" says "d" or "t" as the past-tense ending of any base word which does not end in the sound "d" or "t." When it says "ed," it forms another syllable.
- Rule 29.** Double consonants within words of more than one syllable should both be sounded for spelling.

Marking Checkpoints

1. Does the word have more than one syllable? If so, divide it.

river

2. Is there a silent final e? Is it rule:

1. time
2. have blue
3. chance charge ,
4. lit tle₄
5. are₅ (no job e)

3. Do any of the syllables end with a single long vowel? Underline them.

ze ro

4. Are there any phonograms with two or more letters? Underline them. Do they say the first through sixth sound?

²
read

5. Are there any single letter phonograms that have more than one sound? Mark them if it is not the first sound.

²
his

6. Is there a phonogram that doesn't say its usual sound? Underline it twice.

of

Terrible 10

199

DO

NOT

s | ay
n | ow
s | aw
n | ew
b | oy

ai
ou
au
ui
oi

er ir ur wor ear

5 REASONS FOR A SILENT FINAL E

1. The “e” makes the vowel say its long sound.

time

2. English words do not end with u or v.

blue **have**

3. To make the c say **ĉ** and the g say **ĝ**.

chance, **charge**

4. Every syllable must have a vowel.

lit **tle**

5. The no job e.

are

Spelling Words

me r. 4	bed
do ³	top
and	he r. 4
go r. 4	you ³
at	will r. 17
on	we r. 4
a r. 4	bad
it	red
is	old r. 19
she r. 4	of
can	be r. 4
see	this
run	all r. 17
the r. 4	your ³
in	you ³
no r. 4	out
now	time
man	to ³ day
ten	have ₂
so r. 4	come ₅

Reading Checks

Lesson 1
1. B
2. C
3. A
4. E
5. D
6. C
7. A
8. C
9. _____
10. _____
Score: 1

Timed
Nov 3, 99
Lesson 2
1. C
✓ 2. A
3. D
4. C
5. D
6. C
✓ 7. D
8. D
9. _____
10. _____
Score: 6

Nov. 17, 90
Un-timed
Lesson 3
1. D
2. C
3. B
4. A
5. C
6. B
7. A
8. D
9. _____
10. _____
Score: 8

Nov 7, 90
Timed
Lesson 4
1. C
2. _____
3. C
4. C
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
Score: _____

Dec 1, 90
with timed
Lesson 5
or 1. B
or 2. D
or 3. A
or 4. C
or 5. A
or 6. D
or 7. C
or 8. B
9. _____
10. _____
Score: 6/8

Dec 7, 90
Timed
Lesson 6
1. D
2. _____
3. C
4. _____
5. _____
6. B
7. _____
8. _____
9. _____
10. _____
Score: 2/6

Appendix G
Word Bingo Example

Word Bingo

This activity can be used in a variety of ways. The Word Bingo card on the next page was an actual activity. This description will detail the kinds of content that can be reviewed or practiced with this activity.

Difficult words were taken from the short story, *No More Chances* by Diane Swenson. I wrote the difficult words from the story, one per square, and made copies of the card with those words. After passing out the Bingo cards, I asked students to mark their cards based on directions I gave them. I would mark the card on an overhead projection. Any kind of prompt is possible—it can be a review of content learned in other classes, learned months before, or being practiced that week. The prompts for this particular assignment were:

- find the word in the story and write the page number where it was first found (students were assigned one or more words and then shared the page number)
- read each word as I call on you, then read them all three times each
- find 3 words that are compound words and circle them
- find a word that has “/i/ 3-letter /i/” (**igh**) and underline the phonogram
- find the words that end in “ed” and decide which of the 3 sounds each is making
- find a word with “/sh/, tall /sh/” (**ti**) and underline the phonogram
- put a star in the upper right-hand corner if the word has something to do with school
- underline the phonogram /or/ (**or**)
- What is your prediction about what this story is going to be about?

Other ideas are to mark the words that have 2, 3, or 4 syllables; mark the words that have a suffix or prefix; mark the vowels, verbs, adjectives; find and mark the words that are plurals; find words that are synonyms or antonyms, or have a particular meaning. The possibilities are endless.

NO MORE CHANCES

74 3 ★ skipped	75 4 troublemakers	75 grounded	75 ★ reports
74+77 ★ principal	77 ★ suspended	77 stomped ³	78 insisted
76 strict	79 ★ detention	77 weekend	82 afford
82 grasp	83 ★ record	84 mistake	84 ★ bathroom
86 2 sighed	89 famous	89 ★ college ²	90 2 advice
90 2 smoothed	92 stomach	91 ★ military	91 expenses

Appendix H
Itemized List of Skills to be Practiced by Teachers
in Proposed Year-Long Reading Course
as Recommended by Brady and Moats (1997, p. 19-20)

Supervised practice in teaching reading should include opportunities to :

A. Become proficient in fostering phoneme awareness through organized games and informal activities. Activities should be planned and executed with respect to a developmental continuum.

B. Know ways to teach letter names and shape recognition and the writing of letters using an explicit, standard letter formation system.

C. Gain a working knowledge of ways to introduce regular sound-symbol patterns, letter clusters, and syllable types, including demonstrating proficiency in representing all of the 45 speech sounds of English.

D. Be able to teach the formation of letter shapes for handwriting, both manuscript and cursive, to be integrated with the teaching of reading and spelling.

E. Be able to select appropriate reading material, both stories incorporating phonic patterns and other literature, for various levels of reading acquisition.

F. Become familiar with methods for teaching analysis and spelling.

G. Engage their students in activities to promote knowledge of word meanings and vocabulary development.

H. Teach the orthographic conventions of spelling regular and rule-based words.

I. Be able to foster comprehension using validated techniques such as semantic webbing, reciprocal teaching, and analysis of genre (narration, exposition, poetic writing). Stimulation of a child's comprehension abilities should be part of literacy instruction from the beginning.

J. Teach writing skills helping students construct sentences, paragraphs, and longer compositions, using writing as a tool for thought.

K. Demonstrate knowledge of and the practical application of positive, active, and systematic teaching techniques, using review and practice of what has been taught directly, discovery learning, and teaching to mastery.

L. Exhibit practical knowledge of how to assess children's reading abilities, and of appropriate lesson planning to cover each of the items listed above.