THE BEST PRACTICES FOR DELIVERING ALPHABETICS, FLUENCY AND COMPREHENSION INSTRUCTION TO STUDENTS WITH READING DIFFICULTIES WITHIN THE CONTEXT OF LEAST RESTRICTIVE ENVIRONMENT: A REVIEW OF THE LITERATURE

by

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Table of Contents

Abstract ...................................................................................................................................... 4

Chapter I: Introduction ................................................................................................................ 5

Statement of Problem .................................................................................................................. 5

Research Question ..................................................................................................................... 8

Definition of Terms .................................................................................................................... 8

Chapter II: Review of the Literature .......................................................................................... 9

Alphabetic .................................................................................................................................. 9

Fluency ...................................................................................................................................... 20

Comprehension .......................................................................................................................... 27

Chapter III: Results and Analysis ............................................................................................. 32

Alphabetic .................................................................................................................................. 32

Fluency ...................................................................................................................................... 34

Comprehension .......................................................................................................................... 35

Chapter IV: Recommendations and Conclusion ......................................................................... 36

Recommendations .................................................................................................................... 36

Areas for Further Research ...................................................................................................... 37

Summary and Conclusion .......................................................................................................... 38

References ................................................................................................................................ 40

Appendix ................................................................................................................................... 44

Alphabetic .................................................................................................................................. 44

Fluency ...................................................................................................................................... 45
Comprehension......................................................................................................................... 46
Progress Monitoring Meetings.................................................................................................. 48
Developing Aim Lines.............................................................................................................. 48
Abstract

The National Reading Panel released a report in 2000 with research-based recommendations for reading instruction. In this paper, these recommendations are discussed within the context of Least Restrictive Environment. Research suggests that alphabets should be taught in a small group on a pull out basis and that fluency and comprehension can be taught with small individual lessons and follow-up practice and prompting in the general education classroom. A handbook is included with specific teaching strategies.
Chapter I: Introduction

Statement of Problem

The central point of special education is to allow access to the general education curriculum. As such, literacy of special education students is a primary concern. If a student is not able to read grade level text, it stands to reason that they will have difficulty understanding the content material that is expected of them. There were 5,912,586 students receiving special education services in the United States in 2007 with 212,479 (88,358 with Specific Learning Disabilities) of those students receiving services in Michigan (U.S. Department of Education, 2008).

The repercussions of having a Specific Learning Disability (SLD) can be seen in the education levels and earnings of adults with self-reported learning disabilities. The National Institute for Literacy reports that only 17.1% of these adults earn a high school diploma or GED in comparison to 34.4% of adults without learning disabilities. They are more likely to be unemployed and less likely to be employed full time (2003).

The National Reading Panel analyzed a large body of reading research and submitted a congressional report detailing their findings. The main topics included Alphabetics, Fluency, Comprehension, Teacher Education, and Computer Technology (National Institute of Child Health and Human Development [NICHHD], 2000). The report focused on using evidence-based research in teaching children to read.

Although the report focused on research concerning teaching the average student to read, the components of the report can be examined in the context of special education. Students receiving special education services for reading difficulties clearly did not learn at the same rate
as their peers in the general education classroom. This literature review will examine alphabetics, fluency, and comprehension as each area applies to students with learning difficulties. Best practices for delivering instruction to special education students in these three areas will also be considered.

As a Special Education Coordinator for a charter school serving Kindergarten through eighth grade students, I am charged with the responsibility of maintaining an effective special education program. I review Individual Educational Plans (IEPs) for both legal compliance and instructional effectiveness. I also monitor special education students' progress as they work towards their IEP goals.

I receive many questions from special education and general education staff about how to include special education students in the daily curriculum. There is an ongoing discussion about when to use pull-out services for special education and when to use inclusion and co-teaching. Federal and state guidelines require the IEP team to consider a continuum of placements for services so that the least restrictive placement can be determined (Michigan Administrative Rules for Special Education, 2009). As instruction in the general education class is the least restrictive environment for a student, the team should try to deliver services as close to that environment as possible.

Inclusion services allow the special education student to remain in the general education classroom, thus satisfying the least restrictive environment requirement. Unfortunately, inclusion is not a simple answer to the continuum of services question. The effectiveness of a student's educational program must also be considered and inclusion is not always an effective means of instruction.
Inclusion has been the subject of much debate. The research showed mixed results on the effectiveness of inclusion (Fuchs et. al., 1995; Manset & Semmel, 1997; Marston, 1996). The Council for Exceptional Children stated, “(t)here is no validated body of research to support large scale adoption of full inclusion as the only service delivery model for ALL students with learning disabilities” (1995, p. 5). Zigmond contended that “there is no simple and straightforward answer to the question of where students with disabilities should receive their special education instruction” (2003, p. 196). She went on to explain that placement is not the determining factor for success for special education students. Zigmond gave two reasons for this conclusion. First of all, the body of research is flawed; random studies with adequate controls are very difficult to perform with the special education population. Secondly, Zigmond stated that researchers are asking the wrong question. The studies done on inclusion have looked at the overall trend of a group of students. Special education is focused on the individual student rather than a group of students. There are also a variety of disabilities as well as ability levels within disability categories. Zigmond made an excellent point: “(W)e know that what goes on in a place, not the location itself, is what makes a difference” (2003, p. 197). One of the findings of congress in the Individuals with Disabilities Education Improvement Act of 2004 corroborated this idea by identifying special education as a service rather than a place.

As students move up the grade levels, the gap between special education and general education students becomes more apparent and the question of how to teach them reading becomes more difficult to answer. Students in the upper elementary and middle school grades may not be able to read the grade level textbooks but are still required to learn the curriculum. As students are expected to be fluent readers by the time they reach third grade, the Language Arts
curricular emphasis shifts from learning to read to reading to learn. If students are pulled from the classroom at this time for basic reading instruction, they will not make progress in the Language Arts curriculum.

As I develop guidelines for best practice within my program, I am examining the relationship between the recommendations of the National Reading Panel report and the need to consider a continuum of placement for special education students. As the ability to read at grade level has such an impact on a student's ability to access the curriculum, I will consider how reading services can most effectively delivered through the least restrictive environment continuum.

**Research Question**

What are the best practices for delivering alphabetics, fluency and comprehension reading instruction to students with reading difficulties within the context of least restrictive environment?

**Definition of Terms**

**Comprehension:** The ability to make sense of what is read (National Institute for Literacy [NIFL], 2009).

**Alphabetics:** Phonemic awareness and phonics instruction (NICHHD, 2000).

**Fluency:** The ability to read a text accurately and quickly (NIFL, 2009).

**Graphemes:** The letters of written language (NIFL, 2009).

**Phonemes:** The smallest units of spoken language. Phonemes are combined to create syllables and words (NICHHD, 2000).

**Phonemic awareness:** The ability to focus on and manipulate phonemes in spoken words.
Phonics: The relationship between the letters of written language and the sounds of spoken language (NIFL, 2009).

Chapter II: Review of the Literature

Alphabets, fluency, and comprehension were three subareas reviewed in the National Reading Panel report (NICHHD, 2000). The following review of the literature examines each of these concepts as they relate to students with reading disabilities. Each study is analyzed for evidence of a positive treatment effect which will indicate strategies and techniques that can be incorporated into a best practices guide. The amount of instructional time for the interventions as well as the best environment for the instruction to take place is also considered.

Alphabets

The National Reading Panel conducted a meta-analysis of experimental and quasi-experimental studies of the effect of systematic phonics instruction on reading instruction. The panel found 38 studies that met the study criteria. A statistical effect size was calculated with the following interpretation: $d = .20$ (small), $d = .50$ (moderate), $d = .80$ (large) (NICHHD, 2000).

A moderate effect size (0.44) was calculated for the use of systematic phonics instruction. Certain programs appeared to be more effective than others, with programs teaching students to convert letters to sounds as having the greatest effect (0.45). Tutoring had the greatest effect at 0.57, but small group instruction was also positive (0.39). Students in kindergarten through sixth grades all made improvements although more improvement was noted at kindergarten (0.56) than in second through sixth grades (0.27). A moderate effect size was noted for first grade reading students (0.74), but the effect size for students in second through sixth grade was not
statistically significant (0.15) (NICHHD, 2000). The panel concluded that systematic phonics instruction was more effective in teaching children to read than programs that did not involve specific phonics instruction. It also appears as if the greatest impact is seen in the lower grade levels.

The results of the meta-analyses raise questions about systematic phonics instruction for students with disabilities. It appears that this is an important instructional technique to employ in kindergarten and first grade classrooms. Students in second grade and above, however, do not see as positive of a gain as the younger students. It is unclear if this small gain would exist for any reading intervention or if the phonics instruction is not as effective.

The size of the instructional group can be considered in the context of inclusion. Although tutoring and small group instruction both had statistically significant effect sizes, tutoring was more effective. This should be considered in the development of guidelines for practice. It appears that phonics instruction may best be accomplished through individual tutoring.

Wise, Ring and Olson (1999) studied the effect of explicit attention to articulation in phonics instruction. The authors selected 122 students in second through fifth grade who had average IQ but were in the bottom 10% in their class in reading ability. Students were spread out over multiple schools. Although the students in the treatment group were randomly assigned to a treatment, it is unclear if eligible students were also randomly sorted to treatment and control group.

There were three treatment groups: sound manipulation, articulation only and a combination. Students in the articulation only group learned articulatory awareness concepts,
such as how the mouth and throat make phonemes, and participated in activities to strengthen their awareness of articulation. The sound manipulation group also learned about articulatory awareness but also manipulated pictures of these sounds to form vowel patterns. Finally, the combination group learned how to make vowels with their mouths and also learned how to manipulate sounds within syllables. Students in the control group continued with their regular language arts classes. Treatment groups consisted of 50 hours of instruction.

The treatment methods in this study included computer-based programs. Students also received tutoring that could be supplied by a Speech and Language Pathologist or a trained teacher. Students already receiving speech and language services may benefit from instruction in articulatory awareness as part of their programming. Other students may be able to work on a computer program for individualized instruction in the general education or special education classrooms.

A variety of assessment measures were used, including measurements of word recognition, phonological decoding, phoneme awareness, nonword repetition, orthographic coding, spelling, reading comprehension and arithmetic. All assessments were given as pre- and post tests. All three treatment groups saw large effect sizes (gains in standard scores from 0.73 to 1.73) in every area assessed with the exception of math (gain in standard score of 0.40). The assessments, except math, were given one year later to the treatment groups. All groups still showed similar or greater gains when compared to the posttest.

Wise, Ring and Olson concluded that all three treatments were statistically significant. As a result, the type of program used for students could be adjusted based on the needs of the teacher (1999). The strong effect sizes are especially important when the grade levels of the
students in the study are considered. The National Reading Panel results indicated that students with reading difficulties that persist after first grade may not make great improvements in reading after phonemic awareness training. Wise, Ring and Olson (1999) noted a strong effect after 50 hours of intervention for second through fifth grade students. The accuracy of the results are tempered a bit by the lack of random assignment to treatment and control groups, but the results are still worth considering.

Rashotte, MacPhee, and Torgenson (2001) studied the effectiveness of a phonologically based reading program. One hundred fifteen students in grades one through six with difficulties in phonetic decoding and reading at the word level were selected for the study. Students were matched by ability and randomly assigned to one of two groups.

One group of students received instruction in a program based on phonemic awareness, phonics skill development, and reading and writing for meaning. The other group of students attended their regular language arts class. The regular language arts classes were literature based. Grades one through three incorporated some phonics instruction, but teachers did not explicitly teach phonics. Grades four through six did not have any phonics instruction in the regular language arts class. After eight weeks, the first group went to their regular class while the second group received treatment. The first group received 35 hours of instruction and the second received 31. Treatment was given in a small group format with three to five students per group. Assessments were given to measure accuracy, comprehension, fluency, phonological awareness and spelling (Rashotte, MacPhee, & Torgenson, 2001).

The treatment groups experienced larger gains than the control groups in both treatments, with gains usually decreasing in the higher grades. An exception was seen in a measure of word
efficiency in grades 5/6 as they had a decrease in score. The effect sizes seen in this study were largest with younger grades but were statistically significant for grades five and six as well. Even more important than the gains in phonological awareness and decoding were the gains in comprehension. Fifth and sixth grades had effect sizes of 0.43 and 0.64 as measured by the two comprehension assessments. Gains were largest the first and second grade group and decreased for grades three and four, although they were still large enough to be statistically significant. Grades 1 and 2 had the largest gains at 1.44 and 1.55 and grades 3 and 4 at .86 and .60 (Rashotte, MacPhee, & Torgenson, 2001).

Rashotte, MacPhee, and Torgenson (2001) concluded that a phonetic reading program delivered as small group instruction can, "significantly impact the phonetic and word-level reading skills as well as the reading comprehension skills of deficient readers in first through sixth grade" (p. 130). As instruction was given in a small group, the results of this study will be useful in the development of guidelines for intervention group sizes and locations. Groups of three to five students may be served within the classroom as part of a co-teaching model. As the gains were larger for younger students, special education teachers may want to include non-disabled students from the lower grades in the intervention group as a preventative measure.

Lovett et al. (2000) studied the effectiveness of phonological and strategy-based reading interventions for a group of eighty five severely reading disabled students. Participating students ranged in age from six years nine months to thirteen years nine months and were an average of two standard deviations below their peers in reading. Students were matched according to ability and randomly assigned to one of five groups. Each group had a different combination of treatment over the course of seventy weeks.
Teachers provided treatment with two to three students per group. The treatment segments involved remediating basic phonological skills or word identification strategies. Two control segments were constructed by providing instruction in academic (non-reading) or organizational skills. Assessments measured letter-sound knowledge and word identification skills that also measure knowledge transfer to other words. Assessments were given as pretest, three times within the treatment, and as a posttest.

Lovett et al. (2000) supplied numerous data combinations, including acquisition of trained content and transfer to real words. Although it is important for students to learn specific content, as measured in the acquisition of trained content data, I will focus on the outcomes for transferring to real words. It stands to reason that students who can transfer knowledge to new words will be able to read more words than those who are only reading words they were specifically taught. All students, including the control group, made gains when their pre- and post-test scores were compared. Overall, the students receiving a combination of phonological skills and word identification strategies had the highest gains (Lovett et al., 2000).

Lovett et al. (2000) reported an increase of one and a half standard deviations in phonological decoding skills for the group with the highest gains. These students were, on average, two standard deviations below their peers prior to the onset of the study. This is promising although it would be interesting to see how the students compared to their peers at the end of the study. It would be expected that their peers would also have made gains over the 70 weeks, which may have maintained the gap.

The results obtained by Lovett et al. (2000) seem to corroborate the positive effect of phonological skill instruction. There is significance in the data supporting a transfer of
knowledge to other words. It is important for students to develop skills that will allow them to transfer knowledge to new words encountered in text. The data results were given as a composite of scores for all age groups involved in the study, so it is unclear if the older students experienced the same level of gains as younger students. The age range of six to thirteen years is significant and the studies previously cited showed a difference in gain scores for older students when compared to younger participants.

Lovett and Steinbach (1997) also conducted a similar experiment that separated data by grade spans. A similar format was used with 122 severely reading disabled students in grades two through six. Students were selected to participate in remediation of phonological skills (PHAB), word identification strategies (WIST), or an academic and organizational skills program (CSS). It is unclear if the selection was random. Treatment consisted of 35 sessions and involved groups of two or three students per teacher.

Assessments were given as pre- and post-tests and included tests of trained material, transfer of learning, and standardized measures of phonological analysis, reading and writing achievement (Lovett & Steinbach, 1997). As with the previous study, the data for knowledge transfer to real words will be discussed. Results are separated by grades 2/3, 4, and 5/6. Both treatment groups (PHAB and WIST) experienced more gains than the control group (CSS) across grade levels in the test of transfer. Students in the 2/3 grade group achieved gains of 91.0 (PHAB) and 85.2 (WIST) while the control group gained 28.6. Grade 4 had gains of 109.0 (PHAB) and 95.5 (WIST) with the control group gaining 16.9. Grades 5/6 had gains of 117.0 (PHAB) and 59.1 (WIST) and the control group had a gain of 5.0.

Lovett and Steinbach (1997) concluded that, "children with severe reading disabilities can
make sizeable gains in word identification, word attack, and basic phonological processing skills after 35 hours of systematic remediation that addresses their core areas of deficit” (p. 205). The gains in older students are supportive of continued remediation in phonological skills as students progress in school. It would be interesting to study data that combines phonological analysis skills and word identification skills treatments across the grade spans to see if a combination will result in greater gains than a single treatment.

Other factors of note include the group size and the length of treatment. Students received remediation in ratios of two or three students per teacher. This combination allows for small group instruction in both the special and general education classrooms. A treatment length of 35 sessions is relatively short and could be used as a context for progress monitoring.

McMaster, Fuchs, Fuchs, and Compton (2005) examined a group of first grade students who were not responding to a research-based intervention. Fifty-six students were identified as not responding to a phonologically based reading intervention (PALS). These students were randomly assigned to one of three groups: standard PALS, modified PALS, or tutoring (2005).

Students in the regular PALS program followed the structured program along with their classmates. Modified PALS involved fewer sounds and words introduced at a time, a coach modeled the sounds before the student said them, and a greater emphasis on phonological awareness and decoding. Both PALS and modified PALS were conducted in the classroom. Tutoring was provided on a one to one basis with an emphasis on teaching to mastery, giving the student more time, and adding a motivational component.

Assessments were given as pre- and post-tests and included rapid naming, phonological awareness, reading words and spelling. Treatment was carried out over 20 weeks. Treatments
were compared with between-group ANCOVAs with tutoring vs. PALS, tutoring vs. modified PALS, and PALS vs. modified PALS. No significant statistical difference was seen in any of the treatments. McMaster et al. attributed the lack of significant difference to the short time frame and intensity of the treatments. Students were seen three times a week for 35 minute sessions. The authors questioned if this amount of time was not intense enough for the non-responding students. This is an interesting question as the tutoring treatment was similar to the special education programming carried out at my school. It is common for students to receive three 30 minute sessions for reading assistance. The techniques used in the tutoring session are also similar to those used by the special education teachers.

Questions are raised by the lack of statistically significant gains. Tutoring is the most time-intensive method of delivering instruction as a provider is working one-on-one with a student. Allocating teacher time to such an intensive process would only be worthwhile if significant gains could be achieved. Previous studies suggest that students past first grade make smaller gains with reading interventions. If this same trend held true for the tutoring model in older grades, tutoring would certainly not be educationally appropriate. As McMaster et al. (2005) did not find statistically significant gains with the tutoring model among first graders and that is the age group most likely to respond to intervention (NICHHD, 2000), one might suppose that the model would also be ineffective for students past the first grade. Further study needs to be made in this area.

Bhatt, Griffin, and Sindelar (2003) focused on the effect of phonological awareness instruction for forty learning disabled students in grades six through eight. The students were identified with phonological awareness deficits as measured by the Lindamood Auditory
Conceptualization Test (LACT). Students were sorted by LACT scores to two equivalent groups. It is unclear if the sort was randomized. Both groups received equivalent instruction, with Group A receiving instruction first, and then Group B. All participants were given a pre-, mid-, and post-test at the same time. The researchers used two assessments for the testing with the goal of measuring both phonological awareness, using the Comprehensive Test of Phonological Processes (CTOPP), and word identification using the Woodcock Reading Mastery Test-Revised (WRMT-R).

Participants received instruction using a modified version of the Great Leaps Reading program which is designed for students in kindergarten through second grade. Bhatt, Griffin, and Sindelar (2003) added lessons on blending, segmenting, and phoneme substitutions and reversals. Instruction was provided on an individual basis over a course of 18 lessons. Students worked on a lesson until they reached mastery with correct responses were charted by the instructor and shared with the student so they could monitor their own progress.

Groups A and B both showed significant gains on phonological awareness skills. When pre- and post-test scores from the CTOPP were compared, Group A had an increase of 2.45 as calculated by Cohen's $d$ and Group B had an increase of 3.94. Group A retained the gains through the four weeks that Group B was receiving treatment. Group B did not show any improvement in phonological awareness skills during the initial four weeks of the study when Group A was receiving instruction. Neither group showed statistically significant gains in word identification skills with Group A having a gain of 0.54 and Group B gaining 0.33. Bhatt et al. (2003) attributed the lack of gains in word identification as possibly due to the severity of reading disabilities within the sample. The instructional program used for the study was designed
for students in kindergarten through second grades and was auditory in nature so students did not have exposure to the written word in the lessons. The researchers also questioned the effectiveness of the WRMT-R as a measure for word identification. Many of the words on the assessment could not be sounded out by the students. The researchers recommend remedial instruction in phonological awareness skills but suggest it be supplemented with letter-sound correspondence instruction in order to facilitate transfer of knowledge to the written word.

Although the increase in phonological awareness skills and Group A's retention of those skills is promising, the lack of transfer to the written word is of concern. If students only know phonological awareness skills in isolation, there isn't a great benefit to reading as a whole. Further research, as suggested by Bhatt et al., on combining phonological awareness skills with letter-sound correspondence would be warranted. If additional instruction in letter-sound correspondence resulted in an increased transfer to general reading skills, the implications for older learning disabled students would be positive.

Conners, Rosenquist, Sligh, Atwell, and Kiser (2006) studied the effects of a phonological reading program on twenty students aged seven to twelve with mental retardation. A total for forty students participated in the study, with twenty in a control group and twenty receiving instruction. Students were matched in pairs according to IQ, age, non-word reading accuracy, phonemic awareness, and language comprehension. Pairs were then sorted to either a control or treatment group. The sort was mostly random although some student assignment was dictated by location. Both groups were given pre-tests involving reading skills, language, and verbal working memory. The post-test was also given to both groups and tested sounding out skills in trained and untrained words and reading non-word and sight words.
Students received individual phonological reading instruction with oral practice in sound blending, letter-sound association, and sounding out. Lessons were scripted, but students proceeded through them at their own pace. Students in the treatment group completed twenty-two lessons. The treatment group achieved significant gains in sounding out when compared to the control group. Gains were greatest in the trained words (approximately 71% correct for the treatment group compared to approximately 47% for the control group), but were also significant in the untrained set (55% correct for the treatment group and approximately 39% correct in the control group). No statistically significant difference was found for reading non-word and sight words.

Conners et al. (2006) suggested that children with mental retardation can achieve phonological awareness skills if the instruction is targeted. They pointed out that 85% of the study participants were already receiving phonics-based reading instruction in school but had made little progress. Although the children in this study were younger (ages 7-12) than the middle school students studied by Bhatt et al. (2003), it should be noted that both groups received oral phonological awareness practice but the students in the Conner et al. (2006) study also received letter-sound association and sounding out instruction. Bhatt et al. recommended further research with the addition of letter-sound correspondence to auditory phonological awareness instruction. A group of seven to twelve-year-old mentally retarded students cannot realistically be compared to a group of learning disabled middle school students, but the results from Conners et al. further support the possibility that letter-sound correspondence instruction combined with auditory phonological awareness instruction may help support the transfer of knowledge to untrained words.
Fluency

The National Reading Panel (NRP) conducted a meta-analysis on two methods of fluency instruction (NICHHD, 2000). The first method included guided repeated oral reading and repeated oral reading. The second method included increasing independent reading. A total of 98 studies were selected for analysis of repeated reading and 14 studies were chosen for increasing independent reading. Selected studies were experimental in design, involved students in kindergarten through twelfth grade, published in a refereed journal and involved English language reading.

Guided oral reading had a moderate effect size of 0.41 for reading achievement. The highest effect size (0.55) was for reading accuracy. Reading fluency has an effect size of 0.44 and reading comprehension had an effect size of 0.35. The National Reading Panel was unable to calculate an effect size for increasing independent reading. There were few studies available that met the Panel's criteria and those that did measured the effect of increased independent reading on general reading skills. The NRP recommended explicit fluency instruction with informal and formal fluency assessments. The Panel called for further research in the area of fluency to determine which components of repeated oral reading have the greatest impact. There are different models for repeated oral reading and further research could clarify which groups of students would respond best to each model.

Mercer, Campbell, Miller, Mercer, and Lane (2000) studied the effects of a supplemental fluency intervention on forty-nine learning disabled middle school students. Students were grouped according to how long they received the intervention: Group 1 received instruction for at least 19 months but less than 25, Group 2 between 10 and 18 months, and Group 3 between 6
and 9 months. Students qualified for the study if they were entering the district and had a specific learning disability. There was no control group.

Students received individual instruction in the Great Leaps Reading Program for a period of 5-6 minutes every school day. The Great Leaps intervention included phonics, sight words and oral reading instruction and involved daily charting of student scores. Students were given a pre- and post-test consisting of a Curriculum Based Assessment (CBA). The CBA was derived from the district's basal reading text. Students in Group 1 (19-25 months) achieved an average of 3.14 years of growth, Group 2 (10-18) averaged 3.08 years and Group 3 (6-9) averaged 1.82 years of growth. It should be noted that Group 1 had the lowest reading level prior to the study with a grade level average of 0.7. Groups 2 and 3 had grade level averages of 1.9 and 1.5 respectively. Mercer et al. (2000) noted that all three groups made substantial progress. Although there was no control group, the researchers pointed out that students in all groups had made little reading progress in the years prior to the study. For instance, Group 1 had only achieved a grade level average of 0.7 by the time they reached sixth grade but were reading at an average of 3.77 after 19-25 (2-3 school years) of intervention. Also of note, the researchers pointed out that the students' main language arts instruction involved literature appreciation and the teachers reported that the reading level was too difficult for the learning disabled students to understand. Mercer et al. stated that, because of the nature of the regular language arts class, the fluency intervention was the only reading instruction the learning-disabled students received.

The results from this study are promising. The amount of intervention provided was small at only 5-6 minutes per session. As mentioned by Mercer et al., a paraprofessional could be trained to provide this sort of intervention, thus freeing up the teacher for more specialized
reading instruction. If Mercer et al. are correct in their assertion that the fluency intervention was the only reading instruction the students received, the gains made are quite impressive. I would be curious to see the results of fluency intervention combined with other strategic reading instruction.

Allinder, Dunse, Brunken, and Obermiller-Krolikowski (2001) contrasted the effects of teaching seventh grade remedial reading students specific fluency strategies with encouraging them to do well. Forty-nine students enrolled in a remedial reading class participated. Fourteen of the forty-nine received special education services. Students were pre- and post-tested with portions of the Woodcock Reading Mastery Test - Revised (WRMT-R) with an additional post-test of a Curriculum Based maze (comprehension) assessment. Participants were randomly placed in the treatment or non-treatment group, but a greater number (33) of students were placed in the treatment group.

Teachers met with each student for five minutes prior to the trial period. Those in the treatment group received instruction in a specific fluency strategy. The strategies were chosen by the students' teachers based on oral reading observations. Students in the non-treatment group were encouraged to do their best when reading. Both groups received book marks with either their identified reading strategy or a statement to do their best written on it. Students all received identical reading instruction over a period of ten weeks with the exception of the oral reading component. Students were prompted to take out their bookmarks and follow their strategy.

Neither group experienced significant gains in word identification or word attach as measured by the WRMT-R. Both groups achieved gains in the WRMT-T passage comprehension subtest. The treatment group scored significantly higher than the non-treatment group on the
maze test. The maze CBM involves silently reading a passage and periodically choosing from three possible words in a blanked out portion of the sentence.

Allinder et al. (2001) admitted that the assessments included in the study did not measure fluency directly. They pointed out the gains on the maze CBM as significant and recommend that fluency instruction become part of regular reading instruction. The researchers also called for additional work to determine if the effects would be as great for students with more severe reading problems. It was unclear how the group of remedial students read in comparison to their general education peers.

The intervention used by Allinder et al. (2001) took a small amount of time and materials. It would be a simple matter to meet with a student for five minutes and make up a bookmark. In order for the effectiveness of the intervention to be measured, it would be necessary to know the beginning reading level of the study participants. It is unclear if this strategy would only work for students who are slightly behind in reading or if all students would benefit. Other curricular applications may also be examined.

Therrien (2004) performed a meta-analysis to identify effective instructional components of fluency instruction and the effect of repeated reading on fluency and comprehension. Included studies were quantitative and experimental in design. The results were for transfer and non-transfer measures were analyzed separately.

Non-transfer interventions involved repeated readings of the same passage. Effect sizes were calculated for all learning disabled and non-learning disabled combined. All interventions had notable effect sizes: a fluency and comprehension cue had a large (0.94) effect on fluency while a comprehension cue had a large effect (0.75) on comprehension. Not giving corrective
feedback had a large effect (0.88) on fluency. Reading a passage four times resulted in the largest effect on fluency (0.95) and comprehension (0.71).

Transfer interventions involved transferring learned strategies to new text. Adult tutoring had the greatest effect on fluency (1.37) and comprehension (0.71). Modeling had a moderate effect on fluency (0.40) while not modeling had a moderate effect on comprehension (0.45). Corrective feedback followed a similar pattern with a moderate effect (0.51) in fluency and not giving corrective feedback having a moderate effect (0.52) in comprehension. Using a performance criterion for repeated readings, such as reading until a certain number of words were read correctly, had a large effect size (1.70). Charting had a moderate effect (0.57) on fluency but not charting had a moderate effect (0.44) on comprehension.

Therrien (2004) also analyzed the effect size of repeated readings for disabled students. Repeated reading in the non-transfer studies showed an effect size of 0.75 for fluency and 0.73 for comprehension. Transfer studies had a 0.79 effect size for fluency and 0.41 for comprehension. Therrien indicated that repeated readings can increase student achievement in fluency and comprehension. Passages should be read aloud to an adult and different strategies should be utilized depending on the purpose of the repeated reading. In order to help students to understand a particular passage, the student should be given a cue and the passage should be read three to four times. If the purpose of the readings is to increase reading performance, corrective feedback and a performance criterion will be helpful.

The effect sizes are significant for both learning disabled and general education students. The differentiation of strategies depending on the purpose of the readings is significant. If a student is learning a particular concept, the non-transfer reading strategies will be most effective.
The transfer strategies can be applied as part of a reading program to improve overall skills. It's also important to note that providing fluency interventions had a positive impact on reading comprehension. It stands to reason that as students were able to read text with fluency, they would be able to take in more of the meaning of the text. A student who is struggling to decode and make sense of the words on the page will not be able to effectively grasp the message of the text as most of the reading effort will be spent on the decoding activities.

Manset-Williamson and Nelson (2005) compared the effects of two supplemental reading programs on a group of twenty students in fourth through eighth grades. Participants were at least two years below their peers in reading fluency and at least two standard deviations below the mean in phonological skills. Students were randomly assigned to either a guided reading group or an explicit comprehension procedures group.

The guided reading group received instruction in phonemic awareness, decoding and fluency. Tutors modeled a variety of comprehension strategies. The explicit comprehension procedures group received the same instruction in phonemic awareness, decoding and fluency but comprehension strategies were explicitly taught rather than modeled as in the guided reading group. Both groups received individual tutoring for twenty hours. Subtests from the Woodcock-Johnson Tests of Achievement, 3rd edition were used as pre- and post-tests. Students were also given daily CBM fluency probes. No control group was used. The guided reading group has a moderate effect size (0.69) in fluency while the explicit comprehension group had an effect size of 0.49. Both groups saw large effect sizes for reading comprehension with the explicit comprehension group achieving the highest effect sizes of 2.03 for oral retell and 1.69 for main idea identification.
Manset-Williamson and Nelson (2005) also completed a between group comparison. There was no statistically significant difference between groups in word attack or reading fluency. The guided reading group had greater gains on the Letter-Word Identification subtest. The explicit comprehension group achieved greater gains in oral retell and main idea identification. Manset-Williamson and Nelson (2005) argued for the need for intensive individualized reading instruction in the inclusive classroom. They pointed out that the typical inclusive classroom cannot provide the level of instruction needed for learning disabled students to make gains in reading. The researchers also stated that the data show that older students can still make gains in reading.

The lack of a control group makes it difficult to put the results in perspective. A comparison between groups reveals that explicit comprehension instruction is better than guided reading for some comprehension measures, but it is unclear if either of the programs used achieved greater results than would have been obtained in an inclusive classroom environment. The instructional methods used involved individualized instruction for an hour a day; this requires a significant allocation of resources.

Comprehension

The NRP (2000) was unable to complete a meta-analysis on comprehension as they had with alphabetics and fluency. The panel instead reported on vocabulary instruction, text comprehension instruction, and teacher preparation. As teacher preparation for instruction is outside of the scope of this literature review, I will focus on the findings for vocabulary and comprehension instruction.

The Panel felt that the existing research in both vocabulary and comprehension
instruction held too many variables to quantify with a meta-analysis. The researchers followed the National Reading Panel methodology of using experimental research in their analysis. Overall trends in the research were noted with individual study results given as examples. Based on the trends in the research, the Panel recommended direct and indirect vocabulary instruction, repetition and multiple exposures, vocabulary taught in context, task restructuring so the student understands it, active engagement, and the use of computer technology. They also acknowledged that some vocabulary learning is implicit and no single method for teaching vocabulary is sufficient.

As the Panel stated, further research in the area of vocabulary is definitely needed. The trends identified by the Panel are helpful in developing vocabulary instruction, but they are not as clear-cut as other areas of research. It is difficult to ascertain the effectiveness of an intervention for a population of students when the intervention is based on overall trends.

As with the vocabulary analysis, the National Reading Panel (2000) was unable to complete a meta-analysis on text comprehension instruction. The Panel completed a review of the literature in the area of comprehension. Included studies involved reading or comprehension among normal readers, were published in scientific journals (with the exception of dissertations and conference proceedings included in two meta-analyses), were of experimental design and had randomly assigned participants. The Panel identified seven strategies as most effective in teaching comprehension: comprehension monitoring, cooperative learning, graphic and semantic organizers including story maps, question answering, question generation, and summarization (p. 4-42). The researchers called for explicit instruction of comprehension strategies. They made a point of differentiating strategies from skills; strategies are a flexible set of tools that can be
adjusted depending on the situation.

The strategies outlined in the National Reading Panel report may be useful to students with learning disabilities. The Panel focused on research pertaining to normal readers and learning disabled readers do not always respond to treatment in the same way as their peers. As there is a lack of clear research in the area of comprehension, it is possible that general education instruction is not fully effective. If this is the case, it would stand to reason that learning disabled students would be even further behind their peers as they often need additional help in grasping concepts their peers can learn in the traditional classroom.

Bos and Anders (1990) compared the effectiveness of three vocabulary strategies for middle school learning disabled students. Sixty-one students were randomly assigned to one of four treatment groups including direct instruction of definitions of vocabulary terms, semantic mapping, semantic feature analysis, and semantic/syntactic feature analysis. The researchers developed an assessment consisting of vocabulary questions related to the text and comprehension questions that either measured passage understanding or related concepts. A prior knowledge assessment and topic interest inventory were also included.

Students participated in small groups for one fifty minute session to take the prior knowledge test and interest inventory, three fifty minute practice sessions, followed by three fifty minute experimental sessions and finally one fifty minute follow up session. The practice and experimental sessions revolved around the specific treatment. The definition instruction involved memorization of vocabulary terms. The remaining three treatments were based on an interactive format with the instructor using a matrix as a tool for predicting meaning. Students participating in one of the three interactive methods achieved higher scores on the post-test in both vocabulary
(means of 10.58, 10.66, 9.46) and comprehension (9.98, 10.60, 10.14) when compared to the definition instruction group (8.02 in vocabulary and 7.46 in comprehension). All groups declined somewhat in the follow up testing, but the interactive groups maintained higher scores (average of 8.5) in the follow up when compared to the definition instruction group (average of 6.42).

Bos and Anders (1990) suggested that the interactive vocabulary methods bring about a deeper sense of meaning than simply memorizing definitions. They also noted the increased scores in the interactive groups after instruction ended. It appeared as if the interactive vocabulary instruction resulted in lasting change. Comprehension scores were also positively impacted by the interactive vocabulary instruction.

At JKL Bahweting, it is common for vocabulary to be taught primarily by memorizing word meaning. Common accommodations for learning disabled students involve adding visual cues, finding synonyms and antonyms, and similar word-specific strategies. As Bos and Anders (1990) found, memorizing definitions may not be as effective as interactive vocabulary teaching methods. Teaching learning disabled students how to look deeper than the meaning of an individual word may encourage a greater transfer of knowledge to unknown words.

Jenkins, Matlock, and Slocum (1989) examined the effects of direct teaching of vocabulary words and teaching students how to derive contextual meanings of words. Participants included 135 students from six fifth-grade classrooms. Classrooms were randomly assigned to the individual word meaning treatment or the deriving meaning treatment, with three classrooms in each. Students were given two pre-tests; one words in isolation test and one words in context test. A total of six assessments were used for post-tests, including the two assessments used in the pre-tests, two difficult multiple choice tests (containing answers with similar
meanings and semantics) and two easy multiple choice tests (containing answers with clearly differing meanings). Multiple post-tests were used in order to measure achievement at various lengths of treatment. A set of forty-five words from the basal text was selected for treatment. The classrooms involved in the individual word meaning treatment followed systematic direct instruction techniques. The deriving meaning classrooms also used a systemic format. The instructor showed the students a specific set of strategies to follow when trying to determine the meaning of a word.

Students in the individual meaning treatment group scored higher than the deriving meaning group on both the words in isolation and words in context test. The greater scores were seen across all treatment lengths. The individual meaning group also scored higher on the difficult and easy multiple choice tests for individual word meanings. The deriving meaning group scored higher than the individual word group on tests measuring the ability to derive word meanings. Jenkins et al. (1989) suggested that students were more likely to learn and retain the meaning of a word when the teacher focused on it than when the meaning was derived from context. They also noted that the individual word group's scores continued to increase as the treatment time increased and suggested that gains would be even greater if the intervention were carried out over an entire school year.

As this study was conducted as a whole-class experiment, it is unclear if learning disabled students would have the same outcome. One could also question if the individual word meaning would have more impact on reading unfamiliar text when compared to deriving word meaning. Perhaps it would be prudent to use a combination of the two methods depending on the desired outcome. If a student is learning a specific passage or subject, direct vocabulary instruction may
be more effective than deriving meaning. If the desired outcome is increasing general reading and comprehension skills, the deriving meaning techniques may have a benefit.

A majority of the above cited research is in the area of alphabetics. Although there are some strategies identified in the areas of fluency and comprehension, the research base is not as large as that for alphabetics. Each of the studies does serve to contribute to an analysis for the best practices for delivering instruction in alphabetics, fluency, and comprehension. As these results are analyzed and recommendations made, it is important to consider the amount of available research supporting each recommendation. In the case of alphabetics, the recommendations will be based upon a number of studies while fluency and comprehension recommendations may be based on a small amount of research.

Chapter III: Results and Analysis

Alphabetics, fluency and comprehension will each be treated as a separate area of discussion in order to clearly state the instructional strategies for each area. It is important, however, to consider each area as part of an integrated reading program rather than three separate entities when practicing instruction. As the National Reading Panel made recommendations in alphabetics, fluency and comprehension, it stands to reason that students would benefit most from instruction in all three areas.

Alphabetics

It is clear from the research that instruction in alphabetics is most effective in Kindergarten and first grade. While it is important to make a focused effort to remediate phonological deficiencies at the lower grade levels, it is also clear that phonemic instruction in the upper grades, including middle school, will also have a positive effect for struggling readers.
As such, students with phonological awareness deficits should receive targeted phonics instruction regardless of grade level (Bhatt, Griffin & Sindelar, 2003; Conners et al., 2006; Lovett et al., 2000; Lovett & Steinbach, 1997; NICHHD, 2000; Rashotte, MacPhee & Torgenson, 2001; Wise, Ring & Olson, 1999).

Researchers have studied instruction delivered in both individual and small group modalities. As schools have limited time, financial, and personnel resources, it would be cost-effective to deliver small group instruction than individual tutoring. It is also important to consider the number of hours needed to achieve results in a small group when compared to individualized instructional results; if an instructor can achieve quick results with one student at a time, the individualized model may be more cost-effective than the small group model.

The National Reading Panel found that individual tutoring had the largest positive effects, but small group instruction also resulted in positive gains (NICHHD, 2000). An analysis of the previously cited studies supports the conclusion that both individual and small group instruction is effective. Delivery methods in three studies were in an individual tutoring format (Bhatt, Griffin & Sindelar, 2003; Conners et al., 2006; Wise, Ring & Olson, 1999). While all three studies resulted in positive effects, Bhatt, Griffin and Sindelar had limited results as they only reported increases in phonological awareness and no increase in transfer to written word. Researchers in the other three studies considered used a small group delivery model. Groups ranged in size from two to three students to three to five students and all had positive effect sizes (Lovett et al., 2000; Lovett & Steinbach, 1997; Rashotte, MacPhee & Torgenson, 2001).

It would appear that small group instruction can be an effective method for delivering remedial phonological awareness instruction. As the National Reading Panel found that
individual tutoring had the greatest positive effect, it may be beneficial to use this model when time and resources allow (NICHHD, 2000). Although all students with a reading disability by definition struggle with reading, there are variations of difficulty within that group. It may be best to reserve the individualized instruction for students in Kindergarten and first grade, where the instruction will have the greatest impact, or for older students who are not making adequate progress with small group instruction. Whether small group or individualized instruction is used, alphabetics instruction would be best in a pull-out environment in order to allow the provider to tailor the instruction according to specific students.

The National Reading Panel recommended systematic phonics instruction (NICHHD, 2000). The type of phonics instruction given is also important. It appears that instruction in phonological awareness combined with instruction in letter-sound correspondence is the most effective delivery model. While a variety of phonics instruction programs were used, positive effects were seen in all programs that also included letter-sound correspondence (Bhatt, Griffin & Sindelar, 2003; Conners et al., 2006; Lovett et al., 2000; Lovett & Steinbach, 1997; Rashotte, MacPhee & Torgenson, 2001; Wise, Ring & Olson, 1999). A comparison of the results seen in Bhatt, Griffin and Sindelar (2003) and Conners et al. (2006) serves as an example of the increased effectiveness of adding letter-sound correspondence to a phonics program. Both experiments involved oral phonological practice, but Conner et al. also gave instruction in letter-sound correspondence. While both studies resulted in gains in phonological awareness, only Conners et al. reported gains in reading at the word level (Bhatt, Griffin & Sindelar, 2003; Conners et al., 2006).
Fluency

The National Reading Panel recommended explicit instruction in fluency, but acknowledged the need for more research in order to determine best practices (NICHHD, 2000). It was difficult to find studies for this paper that focused solely on fluency; most also incorporated decoding and comprehension. As such, it is difficult to make clear recommendations for fluency instruction. There are, however, some research-based guidelines that can be used in a comprehensive special education reading program. It is my recommendation that particular attention is made to progress monitoring and data collection in order to determine the effectiveness of these techniques.

Explicit fluency instruction is best done in an individualized setting. Although working with a student in a one-to-one environment requires a large allocation of resources, fluency instruction may be accomplished in as little as five minutes a day. As part of fluency instruction involves teaching students to use sets of strategies, it would be possible to train a paraprofessional to carry out some or all of the fluency instruction (Allinder et al., 2001; Mercer et al., 2000).

It is also important to consider the purpose of the students' reading when carrying out fluency instruction. Therrien (2004) identified interventions with the largest effect sizes for either reading to learn a particular concept or reading to increase general skills. It would be beneficial to not only teach students with the outlined strategies, but to also teach the students when to use each set of strategies. Students could self-identify the purpose of their reading and adjust their strategies accordingly. The result would be increased independence as well as increased fluency skills.
Comprehension

The National Reading Panel recommended both direct and indirect instruction in vocabulary. As with fluency, more research is needed to examine the effectiveness of specific vocabulary strategies and interventions. The Panel recommended explicit instruction in comprehension and listed specific strategies to be taught (NICHHD, 2000).

Vocabulary and comprehension can be taught in a small group or whole class environment. As vocabulary and comprehension strategies will benefit all students, it may be best to incorporate these strategies into the general education curriculum (Bos & Anders, 1990; Jenkins et al., 1989; NICHHD, 2000). Struggling students can either receive prompts from the general education teacher within the classroom or may be pulled out of the classroom by the special education teacher for more intensive reteaching.

Alphabetics, fluency, and comprehension instruction are all best taught with explicit instruction. A careful combination of pull-out and inclusion environments will ensure that the reading disabled student receives the needed specialized instruction as well as practice with peers. The fluency and comprehension strategies mentioned would benefit all students in the general education classroom.

Chapter IV: Recommendations and Conclusion

The following recommendations are based on the available research in the areas of alphabetics, fluency, and comprehension. As previously mentioned, more research in the areas of fluency and comprehension is needed. As such, recommendations in these areas should be closely monitored for effectiveness. It would be prudent to continually evaluate the effectiveness of the interventions in all three areas. Analysis of data from this continued monitoring will help
to better define best practice.

**Recommendations**

The appendix contains a handbook for JKL Bahweting special education teachers and paraprofessionals. JKL Bahweting is a unique school with a low pupil to teacher (both general education and special education) ratio. Each general education classroom in grades K-5 has a full-time general education paraprofessional and grades 6-8 share a full-time paraprofessional. Each of the three resource room teachers also has a full-time special education paraprofessional.

Although JKL Bahweting may have more resources than other area schools, the guidelines can still be applied to other school environments. When the guidelines call for a paraprofessional, classroom teachers, peer tutors from older grades, and classroom volunteers may be utilized. As no specific program is called for in the guidelines, schools may use existing curricular resources that contain the needed principles. In some cases, such as with repeated readings, no additional resources are needed.

**Areas for Further Research**

It is clear that more research is needed in the areas of fluency and comprehension for both special education and general education students. Specific strategies and teaching methods need to be developed and evaluated in order to ensure that students will make the greatest possible progress in these areas. There is also a need for studying the most effective sequence for teaching alphabets, fluency, and comprehension to struggling readers. Should students have a solid grasp on all phonetic principles before practicing with fluency and comprehension or should all three be taught at once?

As I worked through this review and considered students I have known, I continually
questioned what makes some students respond to treatment more effectively than others. While we can outline guidelines for practice that will benefit most struggling readers, not all students will respond in the same way. Some students may need different instructional methods or individualized help in order to succeed. While continual progress monitoring will help a provider to identify if a method is working or not, it will take a minimum of four to six weeks of data to make a determination. If a student is nonresponsive to multiple interventions, the amount of lost time can quickly add up. When a student is already behind the peer group, lost instructional time will result in an even greater gap.

As I consider this problem, I question if there are certain identifiable characteristics that will alert a provider of probable success or failure before starting an intervention. We can assess alphabetic knowledge, fluency and comprehension and thus determine how a student places in comparison to peers, but can that data be further used to identify precisely which intervention would be likely to work for that particular student?

It is my goal to continue to collect data on student achievement after my proposed guidelines are in place. I will continue to monitor data with the special education team as they deliver instruction. Any non-responders can be further considered with the hope that successful interventions will be found. Ideally, a pattern will emerge among the non-responders that can be used to strengthen the guidelines and further increase student achievement.

**Summary and Conclusion**

Alphabets, fluency, and comprehension should be part of special education programming. Instruction in alphabets can be achieved through small group instruction on a pull-out basis. Fluency and comprehension instruction can be incorporated into the general
education classroom with a small amount of pull-out services for specific instruction in strategies or reteaching.

Special education providers should follow research-based guidelines for providing reading instruction to students with reading disabilities. The guidelines help ensure a proper allocation of resources and also provide an environment that is likely to result in student success. As good reading skills are necessary in many life activities, it is vital that all students, including special education students, achieve literacy.

It should also be noted that the guidelines are not the end of this project. An ongoing cycle will need to be in place to evaluate the continued effectiveness of the guidelines. Some students may not respond to treatment and may require additional interventions. Data will be kept for these students in an attempt to identify patterns for non-responding students and develop additional guidelines for them.
DELIVERING READING INSTRUCTION 40

References


reading fluency intervention for middle schoolers with specific learning disabilities.


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part b, by disability category and state [Data file]. Retrieved from https://www.idealdata.org/TABLES31ST/AR_1-3.htm


doi:10.1006/jepp.1999.2490

Appendix

Guidelines for the Delivery of Reading Instruction for Special Education Students

Alphabets

*Rationale.* It is clear from the research that instruction in alphabets is most effective in Kindergarten and first grade. While it is important to make a focused effort to remediate phonological deficiencies at the lower grade levels, it is also clear that phonemic instruction in the upper grades, including middle school, will also have a positive effect for struggling readers. As such, students with phonological awareness deficits should receive targeted phonics instruction regardless of grade level (Bhatt, Griffin & Sindelar, 2003; Conners et al., 2006; Lovett et al., 2000; Lovett & Steinbach, 1997; NICHHD, 2000; Rashotte, MacPhee & Torgenson, 2001; Wise, Ring & Olson, 1999).

*Assessment.* Evaluate the student's current phonological skill set. This can be accomplished through Michigan Literacy Progress Profile (MLPP) assessments, the Comprehensive Test of Phonological Processing (CTOPP), Kaufman Test of Educational Achievement, Second Edition (KTEA-II) or other norm-referenced phonological processing assessment.

*Instruction.* Instruction should consist of targeted phonological awareness based on the student's deficit areas and letter-sound correspondence. Students in Kindergarten and first grade may be taught with curricular materials while students in older grades may need a supplemental phonics-based program. Lessons must include letter-sound correspondence and be based on deficit areas.

*Environment.* Students in Kindergarten and first grade and non-responding older students
should be taught individually. All other students can be taught in small groups of two to three and should be grouped according to deficit area. Alphabetic concepts will need to be taught on a pull-out basis.

**Progress Monitoring.** Progress monitoring can be accomplished through the use of Curriculum Based Measurements (CBMs) developed according to deficit area. For example, if a student is working on letter naming, a probe to measure rapid letter naming would be used. CBMs should be administered weekly and charted against aim line.

**Fluency**

**Rationale.** The National Reading Panel recommended explicit instruction in fluency, but acknowledged the need for more research in order to determine best practices (NICHHD, 2000). As such, it is difficult to make clear recommendations for fluency instruction. There are, however, some research-based guidelines that can be used in a comprehensive special education reading program. It is my recommendation that particular attention is made to progress monitoring and data collection in order to determine the effectiveness of these techniques.

**Assessment.** Evaluate the student's fluency rate. Two scores need to be identified: the score on grade level material and the score at the student's reading level. The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) probes or the KTEA-II can be used to measure and norm the student's fluency rate at grade level.

**Instruction.** Determine the purpose for reading. There are different sets of strategies depending on if the student is reading to learn a particular concept (perhaps Science or Social Studies) or reading to improve general reading skills.

**Reading for Particular Concept.** Student should read passage three to four times. Teacher
gives student fluency or comprehension cue. Teacher should not give corrective feedback as student reads (Therrien, 2004). One study found improvements in comprehension when teachers spent a five minute session with a student teaching a specific fluency strategy. The strategy was then written on a bookmark and students were prompted to remember their strategy while reading.

*Reading to Increase Skills.* Instruction should be in a one-on-one environment. Students should be given a performance criterion to meet. The Read Naturally program would work well in this situation.

*Environment.* Fluency instruction needs to be given individually, but it doesn't need to be given for a long period of time. A paraprofessional can also be trained in fluency techniques and can provide some of the instruction and prompts within the general education class environment. If the general education classroom is not utilizing reading centers or other methods of differentiated instruction, the struggling student may need to be pulled out of the room for individualized help. A five to ten minutes session will be adequate for most direct fluency instruction although additional time will be needed for the student to practice the strategies while reading. Depending on the classroom environment, the additional practice may be carried out in the general education or special education setting.

*Progress Monitoring.* The DIBELS Oral Reading Fluency probes or other CBM based on the student's current reading level can be used to monitor student progress. Probes should be given weekly with the results charted against the aim line.

*Comprehension*

*Rationale.* The National Reading Panel recommended both direct and indirect instruction
in vocabulary. As with fluency, more research is needed to examine the effectiveness of specific vocabulary strategies and interventions. The Panel recommended explicit instruction in comprehension and listed specific strategies to be taught (NICHD, 2000).

Assessment. The KTEA-II can be used to measure a student's comprehension skills in comparison to the peer group. CBMs from the grade level curriculum and MAZE CBMs from the student's reading level will provide additional data. Listening comprehension should also be measured through the KTEA-II. If a student is able to understand grade level content through oral delivery, then curricular content can be given through audio recordings and discussion.

Instruction. The National Reading Panel identified seven strategies as most effective in teaching comprehension: comprehension monitoring, cooperative learning, graphic and semantic organizers including story maps, question answering, question generation, and summarization (p. 4-42). The researchers called for explicit instruction of comprehension strategies. They made a point of differentiating strategies from skills; strategies are a flexible set of tools that can be adjusted depending on the situation (NICHD, 2000).

Students may gain a deeper understanding of word meaning if they are taught strategies for deriving word meanings (Bos & Anders, 1990; Jenkins et al., 1989). This may be accomplished by teaching roots and affixes. The National Reading Panel recommended direct and indirect vocabulary instruction, repetition and multiple exposures, vocabulary taught in context, task restructuring so the student understands it, active engagement, and the use of computer technology. They also acknowledged that some vocabulary learning is implicit and no single method for teaching vocabulary is sufficient.

Environment. Comprehension strategies can be taught in a small group setting or whole
class setting. It may be beneficial for all students to learn vocabulary and comprehension strategies, but struggling students may need to be pulled out of class for reteaching. If the general education classroom is not incorporating vocabulary and comprehension strategies into the regular lessons, special education providers should provide small group instruction in the resource room. The general education teacher and special education paraprofessional can provide support in the classroom by prompting students to utilize the strategies.

*Progress Monitoring.* Comprehension can be monitored through the use of CBMs; particularly MAZE CBMs. As with alphabetics and fluency, results should be charted against an aim line.

*Progress Monitoring Meetings*

The special education team will meet once a month to review progress monitoring charts for students receiving reading instruction. Students can be sorted according to how they are achieving in relation to the aim line. If students are achieving satisfactorily, instruction will continue without change. If students are achieving at a rate below the aim line, the instructional practices will be reviewed by the team. The student may need additional instruction or individual instruction.

*Developing Aim Lines*

Students receiving special education instruction will be below their grade level peers. As such, special education students will need to make more than one year's progress in a year in order to catch up to their peers. Fuchs and Fuchs (1993) calculated means and standard deviations for CBM scores in Reading, Spelling and Math for mixed groups of students in grades one through six.
Calculate an aim line for typical growth by multiplying the slope for the student's instructional grade by the number of instructional weeks in an intervention period. As this will only maintain the existing gap between the student and peers, the goal will need to be increased. Add the standard deviation to the mean to calculate the weekly goal. The weekly goal will need to be multiplied by the number of instructional weeks; in the case of an IEP goal this will be 36. Draw a line from the student's current CBM score to the goal score to get the aim line Fuchs & Fuchs, 1993; Shapiro, 2008).

Shapiro (2008) developed a simplified reading fluency table based on Fuchs and Fuchs (1993):

Table 1: Reading

<table>
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<th>Ambitious</th>
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