

EFFECTIVE COMPONENTS OF INTERVENTION FOR STRUGGLING READERS

by

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Abstract

This literature review is comprised in effort to enlighten educators on the components of RTI proven to be effective in schools. Studies used provide insight on specific components such as type of intervention instruction, length of intervention session and size of intervention group.

Chapter 1

Introduction

Public schools in the United States have received criticism due to the high number of students who are unsuccessful readers. Thirty four percent of American fourth grade students read below the “basic” reading level and for students with learning disabilities that percentage is almost double (<http://nationsreportcard.gov>). Reading is a multifaceted task and an imperative prerequisite to success in our ever-changing society. In fact, the ability to read is so critical that policymakers and legislators take our nation’s reading failure into account when making decisions affecting our school system. Reading impacts many aspects of our society, including our prison system. A reading improvement software company claims Arizona State Prisons use fourth grade reading statistics to project how many beds are needed for their institutions (<http://www.readfaster.com>). The ability to read also has an effect on our nation’s economy. It is estimated that only about 30 percent of students entering high school are proficient readers. According to the Alliance for Excellent Education (<http://www.all4ed.org/files/HighCost.pdf>) this is one reason students drop out of high school. Alliance for Excellent Education also states “if the students who dropped out of the Class of 2011 had graduated, the nation’s economy would likely benefit from nearly \$154 billion in additional income over the course of their lifetimes,” (<http://www.all4ed.org/files/HighCost.pdf>). The United States has experienced financial hardships in recent times and the potential \$154 billion high school dropouts could add to our economy would have a huge effect.

Statement of Problem

In years past schools relied on the discrepancy model for special education referrals. Mesmer and Mesmer (2008) define the discrepancy model as a process that requires “a significant difference be documented between a student’s ability (IQ) and achievement in order for a learning disability to be identified” (Mesmer & Mesmer 2008, p. 281). With the severe discrepancy model in place teachers may know students are falling behind academically but cannot provide additional support until the one year threshold is met.

The teaching methods of educators are dependent on legislation. Educational law, more specifically special education has dramatically changed in the past forty years. The most recent version of the Individuals with Disabilities Act (IDEA) states that each state can choose its own system for identifying students with a specific learning disability or SLD (Zirkel and Thomas 2010). With the latest reform of IDEA, response to intervention (RTI) was born. RTI is a method of providing intervention to those students who need extra support and a procedure to identify students who have a learning disability (Gersten and Dimino 2006). Fuch and Fuch (2001) believed that Response to Intervention (RTI) will reduce the number of students qualifying for special education due to poor instruction rather than an actual disability. Possible approaches for identifying specific learning disabilities include “permitting or requiring RTI (response to intervention), permitting or prohibiting evaluation based on severe discrepancy, and/or omitting, permitting or requiring a third alternative of other research based procedures” (Zirkel and Thomas 2010, p. 60). Since schools have the option of using RTI to assist students, RTI has become a popular topic in education. Policymakers hope that RTI will reduce the number of students who truly qualify for learning disabilities (LD).

RTI is a method intended to provide intense instruction to those students who are falling behind academically. It is a three tier system. Visually, it looks like a triangle, with the bottom and largest tier (called tier one) being general education. In tier one students receive high quality instruction within the general education classroom. The middle tier (called tier two) addresses ten to fifteen percent of students who are not successful with core curriculum instruction alone. These students receive the core curriculum instruction plus interventions targeted to individual deficits. The top and smallest tier (called tier three) is for the one to five percent of students who are still not successful with core instruction and targeted intervention. These students, in most cases, are eligible for special education. They receive intensive intervention in addition to core curriculum instruction. In addition, educators can use data collected to make a decision on whether or not a tier three student qualifies as having a learning disability.

Another important aspect of RTI is ongoing assessment. At the beginning of the school year a baseline assessment should be given to identify students who are at risk. This assessment should also be given in the middle of the school year and at the end of the school year to monitor students' progress. Once students are receiving RTI, ongoing assessments are important. These assessments can be used to track the progress of students as well as to inform decisions for instruction.

Significance of Study

In the past students had to fall more than a grade level behind before they were considered for special education help. With RTI the model of waiting is no longer necessary. Students can receive intervention before falling so far behind it seems impossible to catch up.

With the RTI process educators are able to determine if a student's problems with learning are due to lack of quality instruction or an LD qualification. In theory this also reduces the number of students who truly qualify as LD, thereby reducing the number of students receiving special education services.

Research Question

Now that RTI is here and data is available, teachers would benefit from knowing what aspects of RTI have been successful. The following research question is the focus of this paper.

- What aspects of RTI have been shown to have a positive impact on student success in meeting grade level expectations?

Definition of Terms

The following list provides a brief definition of key terms used throughout this paper.

1. Response to Intervention (RTI)- "prevention/intervention frameworks or structures," (van Kraayenoord 2007, p. 364). RTI models can be used to intervene with students who do not respond to the core curriculum and/or to make decisions on special education.
2. Discrepancy Model- the model based on 1977 legislation previously used to identify a student with a learning disability. A discrepancy must exist between the student's IQ and their achievement (Mesmer & Mesmer 2008).
3. Learning Disability – LD Online defines a learning disability as "a disorder that affects people's ability to either interpret what they see and hear or to link information from different parts of the brain (<http://www.ldonline.org/glossary>).

4. Intervention- targeted instruction provided in addition to core curriculum that addresses specific needs (Mesmer & Mesmer 2008).
5. Phonemic Awareness - understanding individual sounds make up words
6. Phonics - emphasizing the individual sounds of letters and how they make words through instruction (<http://www.web.archive.org>)
7. Morphology – the study of word parts that can change the use of words, such as prefixes and suffixes

Summary

The educational system has been undergoing major changes. Changes are due to the population of students that are served and to legislators trying to make teachers more accountable for the success of their students. With a good reading foundation, students are more likely to be successful in their educational career and into adulthood. Solid reading foundations need to be developed at an early age. In the past, educators would wait for a struggling student to become so unsuccessful that the responsibility of teaching him or her would fall into the hands of a special education teacher. In more recent years, RTI has been introduced into the school systems to support struggling students before they fall significantly behind.

Chapter 2: Review of Literature

Frameworks for RTI

Within early elementary classrooms teachers have a developmental sequence used to teach reading. Teachers begin with teaching letters and sounds in isolation. The next step is segmenting and blending sounds. This process is known as phonemic awareness. The methods teachers use to teach phonemic awareness is known as phonics. As the sequence continues students learn each step; they acquire a building block. If one of these steps is not present in a child's reading repertoire that child will most likely struggle with the reading process. RTI is a process that is designed to help students obtain (and retain) every process of reading needed to become successful readers. Since students can be unsuccessful in differing aspects of reading, RTI is a multifaceted program.

Teachers are under a great amount of pressure to get students to read. One component of teaching reading is assessments. Scores on state assessments do not give us a clear picture of a student's ability to read (Buly and Valencia 2002). Policy makers assume reading failure is due to a lack of foundational skills such as phonics and decoding. A study was conducted with 108 fourth grade students who scored below proficiency on the Washington Assessment of Student Learning (WASL). This sample of the lowest scoring fourth grade students in Washington were assessed in the areas of word identification, phonemic awareness, comprehension, vocabulary, rate and expression. While these fourth grade students did score low in all areas failure of the fourth grade reading test, WASL, was "likely not due to a fundamental lack of decoding or word identification skills" since scores in these areas were high enough not to have an impact on

success of the WASL. This particular group of fourth grade students would benefit from an RTI program designed to meet their individual reading needs.

Reading is a multi-faceted process in which each component is like a piece of a puzzle - each piece needs to be present for successful reading to take place. Awareness of individual needs is the educator's responsibility. If a student's need is comprehension then measures, or tests, of oral reading fluency are most helpful in making data-based decisions. Real-word oral reading fluency was most closely related to reading comprehension (Wise et al 2010, p.345). Educators can use similar tools when identifying students struggling with reading.

Interventions can be focused on other aspects of reading such as phoneme blending (blending of individual sounds) or morphological intervention. Struggling early learners can benefit from interventions based on phonemic awareness (2008). Morphological interventions have been found to increase literacy achievement in students with varying disabilities in second through sixth grades (Goodwin & Ahn 2008).

Determining Intervention

Reading intervention can include as few or as many reading components as the instructor desires. All of the studies reviewed here consist of interventions that include more than one component of reading. When deciding on the implementation of an RTI program it is important to know which reading skills poor readers lack. Juel (1988) conducted a longitudinal study of 54 children beginning in first grade and following them through fourth grade. This study started out with 129 students. Many families were military families and moved away throughout the study. The final number of students in the study was 54. The participating children attended one large,

neighborhood school. Of the 54 children 26% were Anglo, 31% Black and 43% were Hispanic Americans. There were 31 girls and 23 boys. The measures used to gather data included the Phonemic Awareness Test developed by Roper/Schneider (1984), the Bryant Test of Basic Decoding Skill (1975), reading a list of 10 preprimer words at the beginning of first grade (word recognition), Iowa Test of Basic Skills, the Wide Range Achievement Test reading subtest, the Metropolitan Readiness Test, place (level) in basal reading series, informal interview about reading behaviors at home, informal interview about attitude toward reading, the Vocabulary and Block Design subtests from the Wechsler intelligence Scale for Children Revised, Wide Range Achievement spelling subtest, and a writing sample scored by two raters. Juel examined the bottom quartile of children and found children who are reading poorly in first grade almost always continue to struggle in the fourth grade. Juel (1988) also examined the skills that poor readers lack. She found problem areas consisted of phonemic awareness, spelling-sound knowledge (decoding), and listening comprehension. In the area of phonemic awareness Juel (1988) found good readers to achieve high scores by the end of first grade while poor readers achieved similar scores at the end of third grade. In the area of decoding most of the children considered poor readers could not consistently decode monosyllabic pseudowords at the end of fourth grade. In the area of listening comprehension many of the poor readers had a score of one standard deviation below the children who were good readers. Juel's (1988) findings on specific foundational skills poor readers lack are important. It is information early educators can use to determine instruction. It can also inform RTI instruction. Instructors providing intervention to struggling students can use Juel's (1988) data to help determine which assessments to use in an RTI situation.

Types of Intervention

Many researchers have conducted studies to determine the types of intervention that prove to be most successful. Goodwin and Ahn (2010) conducted a meta-analysis to determine whether or not morphological instruction improves literacy achievement in struggling readers, and to determine whether or not morphological instruction can improve specific areas of reading such as comprehension, decoding or fluency. To find relevant studies Goodwin and Ahn (2010) used databases such as ERIC, Education Full Text and PsycINFO. Studies used had to meet certain criteria including an intervention including a morphological component, a pretest-posttest control group design, a control group that is compared to the intervention group, school aged participants, and written in English, published after 1980 (Goodwin and Ahn 2010). A total of 17 studies were used for this meta-analysis. Five of the studies were conducted in other countries and two of the studies were conducted in a language other than English. Sample sizes of these studies ranged from 8 to 164 for the intervention groups and from 7 to 97 for the control groups. Goodwin and Ahn (2010) used the variance weighted analyses developed by Hedges and Olkin (1985). Differences between the intervention groups and the control groups ranged from 0.24 to 0.49. Groups receiving intervention in “morphological instruction showed significantly larger improvements on reading outcomes that were between a quarter of a standard deviation unit to a half of a standard deviation larger compared to control groups” (Goodwin and Ahn 2010 p. 204). Goodwin and Ahn (2010) determined morphological interventions can improve reading, spelling, and vocabulary. This meta-analysis is important for educators because it tells us morphological instruction can improve reading outcomes. Morphological instruction should not only be included in an intervention, but should be part of core curriculum.

Interventions when used in a research setting are highly controlled. Denton, et al. (2010) wanted to know if a first grade reading intervention program would continue to be successful when transferred to multiple schools with reduced researcher control. Schools participating in this 2 year study were located in a southwestern state. Initially there were 31 elementary schools from 16 school districts. Three of the schools only participated in the first year, 20 schools only participated during the second year and 8 schools participated in both years. Three of the schools withdrew in the first year and one school withdrew in the second year. To identify a group of students at risk for serious reading difficulties all students were screened in both years (Goodwin and Ahn 2010). Screening assessments included the Texas Primary Reading Inventory for letter sounds, blending phonemes and word reading. Also used was the word reading task of the Woodcock Johnson III Tests of Achievement (WJ-III) and a first grade oral reading fluency passage. Students were selected for participation and randomly assigned to the intervention group (RRI) or the control group (TSP). There were 182 students in the RRI group and 240 students in the TSP group. Students in the RRI group participated in 40 minute lessons five days per week for 30 weeks. Lessons consisted of four components: word work, print concepts/fluency and assessment, supported reading, and supported writing. The TSP intervention was not controlled by researchers but the same format was recommended. Pretest and posttest measures included the Comprehensive Test of Phonological Processing Blending Words subtest, Blending Non-words subtest and Segmenting words subtest. The Test of Word Reading Efficiency (TOWRE) Sight Word Efficiency subtest and the WJ-III Letter-Word Identification subtest were used to measure word identification. The TOWRE Phonemic Decoding Efficiency subtest and the WJ-III Word Attack subtest were used to measure phonemic decoding. Denton, et al. (2010) found that students in the treatment (RRI) group made more

progress in reading than the control (TSP) group. From this study we can learn high quality, empirically based intervention can be successful outside of researcher control and in natural school settings.

Simmons et al. (2011) compared an experimental, commercial kindergarten intervention program to typical practice intervention found in schools. The commercial program used was Early Reading Intervention (ERI) by Pearson/Scott Foresman (2004). Simmons et al. (2011) “hypothesized that students who participated in the commercial program condition would (a) show greater improvements on a range of early phonemic and alphabetic measure and (b) evidence lower incidence of reading risk than students in the typical practice condition” (Simmons, et al 2011 p. 210). Both the condition and ERI interventions were implemented 5 days per week for 30 minutes per day and were in addition to the normal reading curriculum. Students considered for participation had to be “(a) in need of Tier 2 reading instruction, (b) were at least 5 years of age, and (c) received reading instruction in English” (Simmons et al., 2011 p. 211). After a screening process which included the Dynamic Indicators of Basic Early Literacy Skills (DIBELS), Texas Primary Reading Inventory and subtests of the Comprehensive Test of Phonological Processing (CTOPP) there were 232 children who qualified to participate. There were 206 students who completed the study. Students participating in the ERI group received 126 daily lessons lasting for 30 minutes each. Each lesson consisted of seven activities which lasted about three to five minutes each. The ERI program was organized into four parts: (1) learning letters and sounds, (2) segmenting, blending and integrating, (3) reading words, and (4) reading sentences and storybooks (Simmons et al., 2011). Students in the comparison group received interventions lasting for 30 minutes daily. Teachers used interventions typically used in school. Assessments used for pretest and posttest included the Letter Identification subtest of the

Woodcock Reading Mastery Test – Revised (WRMT-R/NU), the Letter Naming Fluency subtest of DIBELS, the Supplementary Letter Checklist of the WRMT-R/NU, the Blending Words subtest of the CTOPP, the Sound-Matching subtest of the CTOPP, the Phoneme Segmentation Fluency subtest of DIBELS, the Word Attack subtest of the WRMT-R/NU, the Nonsense Word Fluency subtest of DIBELS, the Phonemic Decoding Efficiency subtest of the Test of Word Reading Efficiency (TOWRE), the Word Identification subtest of the WRMT-R/NU, the Sight Word Efficiency subtest of the TOWRE, the Test of Written Spelling, the Passage Comprehension subtest of the WRMT-R/NU, and the Peabody Picture Vocabulary Test. The ERI group scored “statistically significantly higher than the school-designed group on the following posttest measures: WRMT-R/NU letter name and letter sound checklists, DEBELS PSF, CTOPP sound matching and blending words and WRMT-R/NU word attack” (Simmons et al., 2011 p. 218). There was “no statistically significant between group differences were found on DIBELS NWF, TOWRE phonemic decoding and sight word efficiency, the Test of Written Spelling, WRMT-R/NU word identification, or passage comprehension” (Simmons et al., 2011 p. 219). In this case students benefitted from participating in either intervention.

Increasing Intervention

Some students do not respond to classroom instruction or to intervention. These students may require a more intense intervention. Wanzek and Vaughn (2008) conducted a study with first grade students who were not making adequate progress when intervention has been implemented. They wanted to know the effects of single dose of intervention and a double dose of intervention. Intervention doses were 30 minutes long, daily and lasted for about 13 weeks. Wanzek and Vaughn’s (2008) research consisted of two studies, study one and study two. Study

one took place in the first year while study two took place in the following year. Researchers used a larger study to select students at risk for reading difficulties. In study one there were 21 students in the treatment group and 29 students in the comparison group. In study two there were 14 students in the treatment group and 22 students in the comparison group. Students who received intervention were assessed in December (at the end of intervention) using the DIBELS NWF and ORF and the Woodcock Reading Mastery Test-Revised (WRMT-R) Word Identification, Word Attack and Passage Comprehension subtests (Wanzek and Vaughn (2008). Students participating in both studies received the exact same interventions with the difference being that students participating in study two received intervention for twice as long as students in study one. Interventions were provided in small groups outside the classroom and consisted of phonics and word recognition, fluency, and passage reading and comprehension. In study one 10 of the students in the comparison group did not receive additional reading instruction while 19 students received additional reading instruction ranging 30 to 700 minutes per week. In study two 12 students did not receive additional reading instruction while 10 students received additional reading instruction ranging from 75 to 300 minutes per week. Differences between students in study one and studies two were not significantly different. . A possible reason differences were not significant could be due to restlessness towards the end of the lesson. Students at a young age have difficulty sitting still for long periods of time concentrating on specific tasks. It may be more effective to do one 30 minute session in the morning and the other 30 minute session in the afternoon. Results did show that students in the treatment groups were making gains on assessment measures while students in the control groups were found to fall behind over time. Intervention for struggling readers is more effective than no intervention at all, however doubling session time does not prove to increase the effectiveness of intervention.

Tier 3 Intervention

Tier 3 interventions are typically used with students who have been unsuccessful in Tiers 1 and 2. Wanzek and Vaughn (2010) provided an overview of various Tier 3 situations and their effectiveness. Tier 3 uses more intense interventions than Tier 1 or 2. Intensity can be altered by changing the size of the group and/or by adjusting the time (either by number of sessions or duration of sessions). Wanzek and Vaughn (2010) used 18 studies that had 100 or more sessions in kindergarten, first, second, or third grade. One aspect of Wanzek and Vaughn's (2010) examination included duration of intervention. Studies included in this aspect ranged from 5 months to 2.5 years. There were few differences in the outcomes of intervention students in comparison to students who did not receive interventions. The authors believe that more data is necessary to further understand this aspect of intervention. They believe studying the total number of hours of intervention may be helpful which is something they could not do based on the dynamics of their information. From data collected it is difficult to say if duration of intervention increases intensity. Another aspect of Wanzek and Vaughn's (2010) research was instructional group size. In this aspect there were a total of 18 studies, 10 studies used a 1:1 student to teacher ratio and 8 studies had a student to teacher ratio ranging from 1:2 to 1:8. When comparing these two groups students in the 1:1 setting made greater gains than the students in the larger groups. Wanzek and Vaughn (2010) noted that the three largest groups had the smallest effect sizes. The findings from these studies show that decreasing the group size does increase the intensity of intervention. Wanzek and Vaughn (2010) also used studies to compare the effectiveness of intervention implemented in kindergarten and first grade to interventions implemented in second or third grade. Reports from the kindergarten and first grade studies

ranged from small to large effects while reports from the second and third grade studies only yielded small effects. This information supports a recommendation of early intervention.

Chapter 3: Results and Analysis Relative to Problem

Reading is a multifaceted process. Most students can and will succeed with high quality instruction. A small percentage of students do not respond to typical classroom instruction. Instead of waiting until these students fall so far behind to possibly qualify as having a learning disability and being eligible for special education services teachers can provide RTI. Since reading involves various components it only makes sense for RTI to have the same various components. Particularly important are Juel's (1988) findings on the characteristics poor readers have. Juel (1988) determined poor readers tend to struggle with phonemic awareness, spelling-sound knowledge (decoding), and listening comprehension. Most studies found for this analysis included components of phonemic awareness and decoding.

One of the most important findings in the studies used for this analysis is children who are poor readers in first grade are almost always poor readers in later grades (Juel 1988). This information is most important to the teachers, administrators and parents who have an impact on children's education. Once it is determined a child is struggling in the area of reading teacher, administrators and parents can work together to provide appropriate interventions to help that child become successful.

Educators may be wondering whether a teacher created program or a commercially created program would be more effective. According to Simmons et al. (2011) students benefit from participating in either one of these programs. Commercially designed programs could be very expensive and therefore unappealing to districts. Teacher created programs would be much less expensive but more time consuming to create. However, we should understand students have a tendency to improve in the area of reading regardless of which type of program educators use.

Chapter 4: Recommendations and Conclusion

Recommendation

Learning to read at the early elementary levels is imperative. Research shows children who struggle to read as first graders tend to struggle in the upper elementary grades and probably beyond. Progress monitoring tools such as DIBELS, CTOPP and TOWRE are important tools when addressing the needs of struggling readers. Progress monitoring takes place at least at the beginning, middle and end of each school year. If a student is found to struggle in the area of reading, interventions should begin and progress monitoring should continue more often than three times per year. When a teacher consistently uses progress monitoring it is more likely children who are struggling in the area of reading will be identified early. The most effective interventions take place while the child is in early elementary school (Wanzek and Vaughn 2010). Unfortunately if intervention is not implemented early on the student is less likely to become a successful reader.

At this point research in the area of specific interventions is limited. Studies used for this analysis feature interventions with multiple components; therefore the recommendation at this point is to implement interventions with multiple components as necessary using progress monitoring data as a guide. The most common skills poor readers lack is phonemic awareness, decoding, and listening comprehension (Juel 1988). Intervention should encompass at least one of these components, if not all. Other effective components include morphological instruction (Goodwin and Ahn 2010), learning letter sounds (Simmons et al. 2011), segmenting, blending, and integrating (Simmons et al. 2011), and decreasing instructional group size (Wanzek and Vaughn 2010).

It is important to understand when a child is in need of intervention it should be implemented as early in their schooling as possible. The source of intervention, typical school practice versus a commercially designed program, is not as important as other factors (Simmons et al. 2011). High quality, effective interventions are most effective when implemented in small group sizes early in elementary grades.

Suggestions for Further Research

More studies implementing an RTI program consisting of multi-component interventions were available than studies implementing an RTI program in which the intervention had only one component. In fact, there were not any studies available in which researchers implemented an RTI program using just one aspect of reading such as decoding. Researching just one component of intervention would further narrow down what works more effectively. To get even more specific results each component would have to be studied and compared to one another. Participants for this possible research situation could include kindergarten, first, second and third grade students who were found to be struggling in the area of reading. Assessments used in pretest, posttest and progress monitoring could be norm-referenced tests such as TOWRE, DIBELS, WRMT-R/NU, etc. Data should reflect the effectiveness of intervention. The results of a study like the one just described could be compared to the studies involving more than one component of reading. This information would be important to educators when making decisions about what components of reading to include in an effective RTI program.

Another area for further research would be the effect of listening comprehension as a component of intervention with struggling readers. Juel (1988) identified listening comprehension as a skill many struggling readers lack. Studies used for this analysis did not

include listening comprehension as a component for intervention. Participants for this study could be struggling readers in the elementary grades. Students could be put into two groups according to grade level, one group including students in grades kindergarten, first and second while the second group includes students in grades four and five. Listening comprehension would have to be one component of intervention; however, there could be other components such as phonemic awareness and decoding. Students could be assessed using The Listening Comprehension Test - 2 (LCT-2), TOWRE, DIBELS, and WRMT-R/NU. Data should reflect the effectiveness of intervention, primarily listening comprehension. Results of this study could be compared to results of studies implemented not containing a listening comprehension component. The information attained from this study would be useful to educators when deciding components of an RTI program.

Summary and Conclusion

In our society reading is a vital skill. Reading is necessary when trying to decide what item to order off the menu at a restaurant, applying for a job, cooking and many other life skills. It is so important policymakers have impact on reading in the public school system. In order to improve the skills of struggling readers before they fall too far behind RTI was developed.

RTI is meant to provide timely, targeted instruction with the goal of increasing reading achievement. RTI is most effective when provided as early as possible in a child's elementary career. Also important is instruction with a small group size. The length of an RTI session is not as important as its content. At this point studies encompass interventions utilizing multiple types of instruction. In summary, sessions should encompass instruction focused on the deficit of the students, should be provided in small groups and should be implemented as early as possible.

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