Education Faculty Publications   Education

2016

Making the Invisible, Visible: RtI and Reading Comprehension

Jonathan Hart
Marlboro Township School District

Divonna M. Stebick
Gettysburg College

Follow this and additional works at: https://cupola.gettysburg.edu/edfac

Part of the Education Commons

Share feedback about the accessibility of this item.

Making the Invisible, Visible: RtI and Reading Comprehension

Abstract

For the better part of a century the educational community has had increased focus on the importance of reading. The publication of *Why Johnny Can't Read and What You Can Do About It* (Flesch, 1955) began the surge of effort to better understand the cognitive process of reading to further examine how educators can help children become better readers. Since this 1950's publication, reading research grew and philosophies developed and subsequently changed. However, one thing remained the same: understanding what we read is critically important to becoming a critical thinker. Thus, reading comprehension research continued to boom and the educational community continues to seek ways in which reading comprehension instruction can be improved. (*excerpt*)

Disciplines

Education

Making the Invisible Visible: RtI and Reading Comprehension

Jonathan Hart

Marlboro Township School District, Marlboro, New Jersey

Divonna Stebick

Gettysburg College, Gettysburg, Pennsylvania

For the better part of a century the educational community has had increased focus on the importance of reading. The publication of *Why Johnny Can't Read and What You Can Do About It* (Flesch, 1955) began the surge of effort to better understand the cognitive process of reading to further examine how educators can help children become better readers. Since this 1950's publication, reading research grew and philosophies developed and subsequently changed. However, one thing remained the same: understanding what we read is critically important to becoming a critical thinker. Thus, reading comprehension research continued to boom and the educational community continues to seek ways in which reading comprehension instruction can be improved. In fact, the newly adopted Common Core State Standards (CCSS) and the PARCC assessment (2015) make reading comprehension a critical component of literacy instruction at all grade levels. As a result, it is evident that school districts across the country must find ways to implement highly effective, research-based strategies that will enhance reading comprehension.

Background and Importance of Comprehension Instruction

Educators have used the gradual release model to implement brainstorming, predicting, and anticipation guides for quite some time. These pre-reading activities are valuable, but they need to be clearly integrated for struggling readers. Interventionists remind readers the importance of thinking about the type of reading they will be encountering, to examine the text prior to starting, to think about the subject they will be reading about, to examine why the author wrote the selection, and to look at how the author organized his or her writing. Unfortunately, many readers do not think about these steps prior to beginning a reading assignment (Gallagher, 2004). When readers neglect to follow these few steps, distractions, lack of motivation, and difficult texts cause unequipped readers to give up and not complete their reading tasks.

Explicit Comprehension Instruction

"Watch me do it" is very different from "listen to me tell you how to do it" (Wiggins, 2007). Students need more than someone simply telling them about comprehension or giving them labels for the various active reading strategies they implement. Learners who do not naturally activate innate problem-solving capabilities to understand texts simply don't figure out how to make meaning without explicit teaching. When it comes to comprehension strategies, it is best to assume all students need some degree of being shown (Pearson & Dole, 1987; Pearson & Fielding, 1991).

Explicit means clear, detailed, and obvious; interventionists who provide an explicit instructional framework as well as an explicit learning framework ensure students have the opportunity to meet success (Stebick & Dain, 2007). There are explicit and implicit themes in literature and explicit and implicit messages in speeches, advertisements, music, and art. Explicit teaching of key literacy concepts and processes uncovers the hidden thinking processes that competent readers go through. Explicit instruction makes the invisible, visible (Stebick & Dain, 2007).

Support for explicit instruction comes from two different empirical studies; experiments showing the effects of learning strategies on comprehension, and case studies of exemplary teachers who use explicit instruction (Cambourne, 2002; Pressley, 2001; RAND, 2002; Williams, 2002). Explicit teaching has proven to be the most successful procedure for teaching comprehension strategies to date (Pressley, 2000).

Just as writers consider their audience, reading teachers consider their audience's experiences, the structure and features of texts, and the context in which the information will be learned. Interventionists use texts to model comprehension strategies, provide guided practice, and offer opportunities for independent application. Strong interventions are based on these premises.

According to Keene and Zimmerman (2007), images originate in our senses and our emotional fabric as they are altered each time we read or reflect on a text. The reader brings the text alive by using sensory images. Stebick & Dain (2007) conclude that the images are evolutionary and that they change over time. Keene & Zimmerman (2007) recommend the following steps in order to develop a sensory rich, active reading, and engaged thinking environment.

Modeling. The teacher models specific ways in which images can be evoked to enhance comprehension. The teacher needs to model how to stand back to reflect upon his/her images in order to help him/her understand more. The teacher begins by reading short selections and limiting the mini lessons to his/her own thinking aloud and explanations about how evoking images improves comprehension. These mini lessons are al-most entirely teacher directed.

Scaffolding. Gradually the teacher invites students to share and expand their own images created as they read. The teacher selects interesting, but relatively unchallenging texts to use with the whole class. The teacher needs to help students become aware of their own images, elaborate them, and develop a sense that reflecting on one's images enhances comprehension. In this way, students become aware of their thinking, and demonstrate metacognition. In small group instruction, the teacher meets with small groups to support children who need more modeling and instruction to connect their images with comprehension. Finally, during independent application and evaluation, the teacher collects depicted images, in any form, from each student and assesses the changes in the images. The elements to assess should include images that are central to understanding key points, extend thinking, elicit all senses and multiple emotions, are adapted and revised as the child reads, and images from text that find new life in the student's writing. Again, these provide yet another opportunity for readers to demonstrate metacognition.

In a developmentally appropriate way, teachers explicitly describe each cognitive strategy, model the strategy, allow guided practice time, and release the students in an optimal learning environment to apply this learned strategy independently (Stebick & Dain, 2007; Zemelman, Daniels & Hyde, 2005). This combination of explicit teaching and gradual transfer of responsibility from teacher to student is especially critical for struggling readers (Routman, 2003).

Explicit teaching focuses on foundational pre-reading strategies that prepare students to read to satisfy their hunger for various topics and to create big ideas from a variety of texts across multiple disciplines (Pearson, Harvey & Goudvis, 2005). Explicit teaching develops students' capacity to work with implicit ideas – to become independent constructors of their own meaning.

A recently published study by the US Department of Education found that teachers' explicit teaching of reading comprehension strategies improved overall reading progress (James-Burdumy et al., 2010). Explicit instruction involves dem-

onstration accompanied by a clear explanation of the purpose of the task. While this may sound easy, one must acquire the skill of explaining thought processes clearly. Teachers provide an instructional framework where we teach struggling readers how to ignite their curiosity and to think deeply as they read across multiple texts for various purposes. When struggling readers engage in metacognitive reading, they begin to ask questions, pause and reflect about the text they are reading, and share curious thoughts.

The RtI Service Delivery Model and Reading Comprehension

It is the primary responsibility of interventionists to provide metacognitive strategies to struggling readers. The questions become: What is the best model to reach a struggling reader? What is the evidence that this model works? One popular service delivery model that has been included in legislation (IDEA, 2004) is Response to Intervention (RtI). RtI works under the assumption that varied intensive levels of instruction are required in order to remediate academic (or behavioral) difficulties in children. It is within the framework where interventionists can explicitly teach strategies based on the specific needs of students. The framework consists of a triangle in which the level of intensity increases as students move up the triangle and receive more intensive interventions.

Figure 1 displays the various levels of intervention. There are three levels of instruction. Tier 2 instruction consists of higher intensity instruction; generally in a pullout and smaller group setting. Research suggests that approximately 15% of students require interventions at Tier 2. Similarly, Tier 3 intervention consists of even higher intensity instruction in a pullout setting in a very small group (or individual) setting. Tier 3 interventions are required for an even smaller group of students, approximately 5% (Fuchs & Fuchs, 2007; Fisher & Frye, 2010). In essence, the RtI service delivery model consists of five core values: a multitier approach, student assessment in decision-making, evidence-based interventions, maintenance of procedural integrity, and development of systems in place (Glover & DiPerna,

Figure 1
*Response to Intervention Triangle*
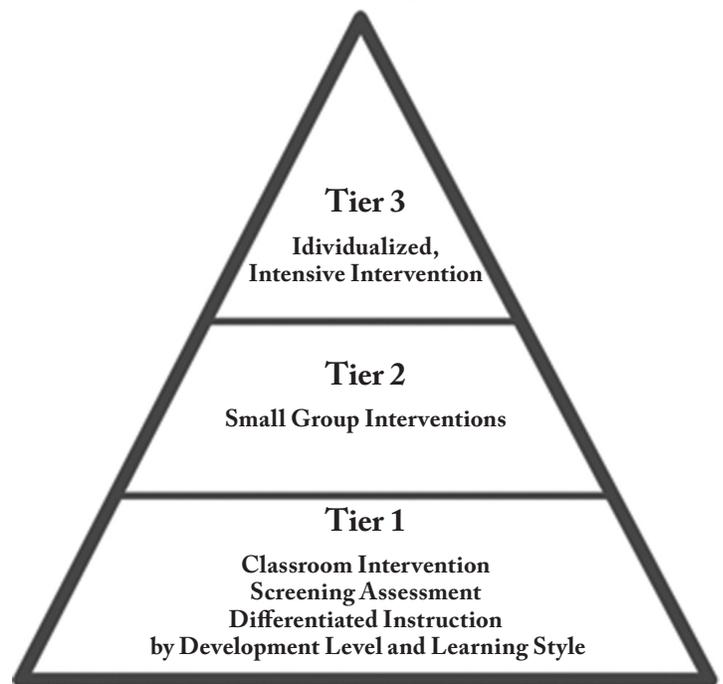
2007). The current study will focus primarily on a district's adoption of the multitier approach to remediate student reading difficulties.

Figure 2 shows how the district has adopted what could be considered the 5 Ts model for RtI service delivery. First, students are *tested* using a universal screening. Second, the assessments are discussed at data meetings where educational professionals place the child into a *tiered* intervention based on need (Stahl & McKenna, 2013). Then, once in the intervention students receive *targeted instruction* based on reading deficit. This intervention is *time bound*, meaning students receive the intervention until data is collected that show the student needs a different service or none at all. Finally, students are *tested again* using the universal screening.

Recent case study research has collected data to suggest districts moving to the RtI service delivery model have become increasingly effective in remediating student academic struggles (White, Polly & Audette, 2012; Robinson, Bursuck & Sinclair, 2013). Specifically, case studies allow for a retrospective look at implementation in specific schools with some links to student achievement, but really discuss implementation implications (Shepherd & Salembier, 2010). The

Figure 2
Model Adopted by District
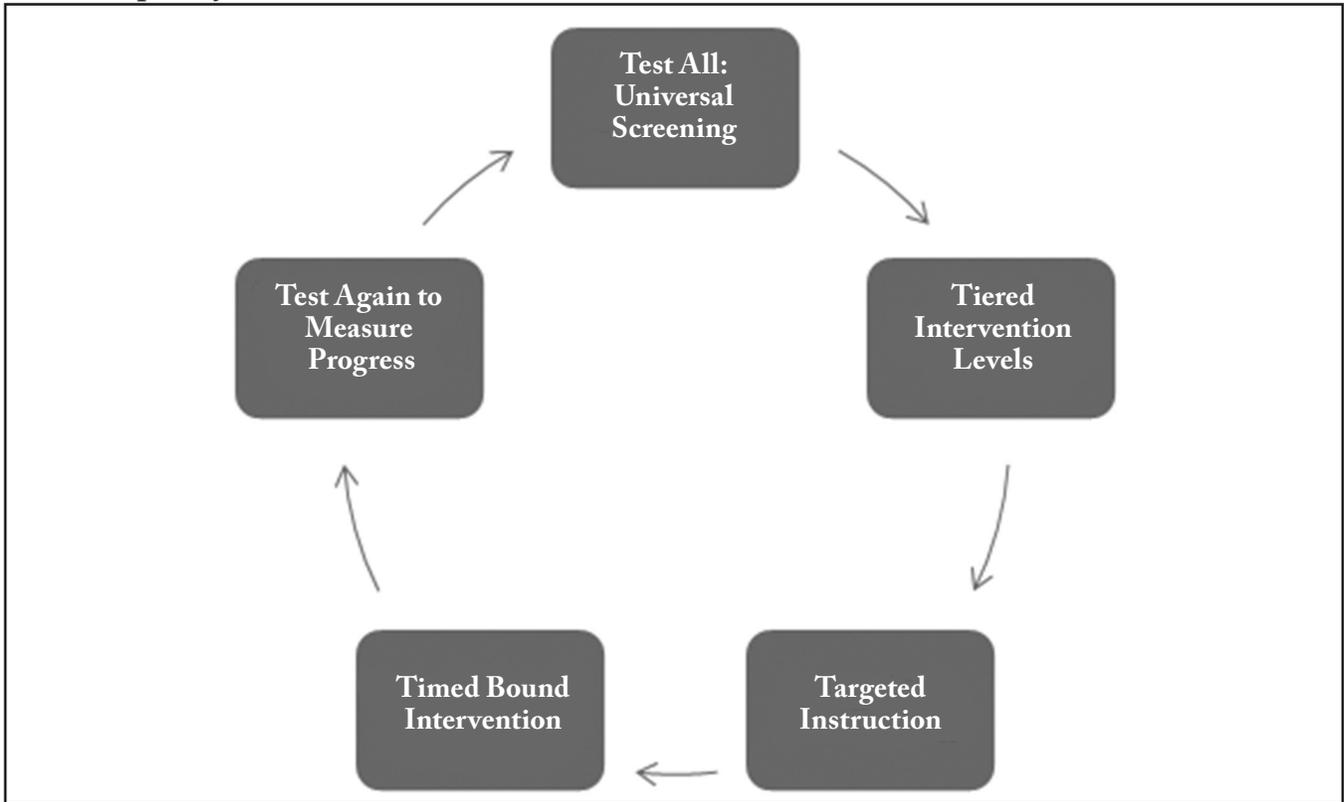
case study research provides a road map for implementation, and shows some evidence that RtI may be an effective implementation of the service delivery model for remediation. However, these studies often fall short in providing empirical data to show how specific interventions can assist in remediating specific reading difficulties. This body of research still allows questions to remain regarding how interventionists can best achieve high-quality comprehension instruction in a remedial setting.

Empirical research has begun discussing the effects of evidence-based interventions. Graves, Duesbery, Pyle, Brandon and McIntosh (2011) used treatment and control group design in a middle school setting to compare outcomes of students who received interventions and those who did not. The results of this urban study show the treatment group having significant gains in oral reading fluency. The study focused on middle school students and oral reading fluency. It continues to be necessary to consider how the RtI model impacts comprehension instruction. Wanzek, Roberts, Otaiba and Kent (2014) exam-

ined the relationship between print instruction and reading achievement in Tier 1 kindergarten classrooms. The findings suggest engagement in print reading yielded significantly higher reading achievement; however, this tells us little about the actual Tier 1 interventions employed and is limited to concepts about print only. It also neglects to address comprehension in intermediate grade levels.

The current study seeks to add to the empirical research regarding implementation of RtI. There is little empirical evidence that implementation of an RtI service delivery model has an effect on reading comprehension abilities, particularly in the late-primary or intermediate grades. We hypothesize that using a targeted and tiered RtI service delivery model will yield consistent results with previous empirical research. Specifically, we hypothesize that implementation of an RtI service delivery model will show more reading comprehension growth in students who receive comprehension intervention instruction.

The goal of the current study is to discover whether implementation of an RtI program af-

fects student achievement in reading comprehension in grade 3, particularly when a program had not yet existed in prior years. There are several research questions that guide our investigation:

1. How does reading fluency performance change from Year 1 to Year 2 as measured by the R-CBM assessment?
2. How does reading comprehension change from Year 1 to Year 2 as measured by the Reading Maze assessment?

Context of the Study

It is important to note that this research is part of a larger study that was examined as part of a school district's transition from a basic skills service delivery model to an RtI service delivery model as intervention for struggling readers. Data were originally gathered in a medium-sized suburban school district in New Jersey. The pre-implementation of RtI school year is referred to as Year 1. In this year reading data were collected via AIMSweb and students were placed into a Reading Student Support Program. This meant that students received 30 minutes of general reading instruction per day, five days per week, in a supplemental pull-out program. During this pull-out period, teachers worked on basic reading strategies that covered all domains of reading, including phonics, fluency, and comprehension. Teachers even attempted to support the instruction that was occurring in the general education classroom. This pull-out period of reading instruction functioned much like a basic skills program. Much of the curricular materials and programs appearing in Appendix A were used when the district used the pull-out basic skills period of intervention, but were not used in a RtI service delivery model format. The AIMSweb data were used exclusively as a means for enrollment into the program, not as a tool to drive targeted instructional intervention.

In an effort to move to an RtI service-delivery model, the district employed different practices for the following year - Year 2. At the beginning of Year 2, the instruction became more targeted and tiered, and assessment was used to drive instructional outcomes. AIMSweb data were used to assist in making placement deci-

sions, but other sources of data were also collected in an effort to properly identify each student's intervention needs. These other sources of data included the Developmental Reading Assessment-2 (DRA-2) and teacher input. Moreover, specific intervention courses were set up for each grade level. Course names were Phonics/Word Study, Phonemic Awareness, Fluency, and Comprehension/Vocabulary (see Appendix A). Each of these courses existed on two levels. First, Level II meant the child required a Tier II intervention. The pull-out period removed the child from his or her general education class and placed the child into a specific course where she or he would meet with a group of students who required the same intervention skills. The group size was approximately 4-6 students and it met three times out of a 6-day cycle. Second, Level III intervention courses meant that a child required Tier III intervention. These interventions occurred in a pull-out setting where students would meet in their homogenous group of students (up to 3) or one-on-one with the teacher. These intervention courses met all six days out of a 6-day cycle.

Methodology

Population

Secondary data analysis was conducted on pre-existing data from a large rural school district in New Jersey. The data set used was a portion of the district's student database. The district has collected data for elementary grades in both the 2013-2014 (Year 1) and the 2014-2015 (Year 2) school years to make placements and educational decisions in regard to programming for children. The district serves approximately 3,500 students in grades PreK-8. This includes six school buildings: two PreK-4 elementary schools, two K-4 elementary schools, a 5-6 school, and a 7-8 school. Students who attend this school district are sent to a regionalized high school for Grades 9-12. New Jersey School Performance Reports (2013) states the district has a rigorous curriculum, dedication to inclusion of special education students, and reports, "Students in the district consistently perform at or above their counterparts on statewide assessments and nationally-normed standardized tests… [the district] is recognized for its innova-

tive and research-based, developmentally appropriate instructional programs" (p. 1). The premise that the district prides itself on research-based programs is the thrust of RtI research and has led to this current investigation. The current research focuses on the newly-adopted RtI service delivery model in grades K-4; therefore, the data included is from all four of the elementary schools.

School Demographics

The district's K-4 elementary schools have varying demographics. Elementary school demographics are presented in detail in Table 1. It is important to note that both School C and D qualify for Title I targeted assistance funds based on their socioeconomic diversity.

The district maintains records of student who qualify for free or reduced lunch status. This is used to identify schools that qualify for Title I funds, and this information is gathered by way of parent report in the beginning of each school year. Parents receive the application for free/reduced lunch in September and are identified by the State of New Jersey as qualifying for this status based on income.

Participants

The current research used a sub-population of 121 intervention students in grade 3 across the 4 elementary schools in the district. Data were examined on 68 students in grade 3 receiving intervention programming in Year 1 and 53 students in grade 3 receiving intervention instruction through the RtI service delivery model in Year 2. Table 2 displays ethnicity data for students in Year 1 and Year 2.

Table 2
Ethnicity Data for Number of Students Receiving Intervention

	Year 1	Year 2
Asian	4	3
Black	3	4
Hispanic	15	18
Mixed Race	4	5
White	42	23

Measures

In grade 3 students are administered the R-CBM and the Maze assessment three times per year: fall, winter and spring according to a schedule developed internally by the district.

Reading-Curriculum Based Measure (R-CBM). The R-CBM assessment is given to students in grade 3 to assess reading skills as measured by words read correctly in one minute (WPM). The mean alternate-form reliability of the R-CBM is between .93 and .95 across grade levels and seasons (fall, winter, spring) and the test-retest reliability ranges from .91 to .96 across grade levels and seasons (AIMSweb, 2012). Criterion validity was established for the R-CBM using the Illinois and North Carolina state reading assessments administered at the end of the school year, and validity scores correlate approximately .7 for grades 3 through 5 and low-to-mid .60s for grades 6 through 8 (AIMSweb, 2012). Students are presented with a passage appropriately normed for his or her grade level. They are instructed to read aloud for the test examiner. If a student is unable to read a word, the

Table 1
School Demographics

School	English Speaking Students	White Students	Students with a Disability	Economically Disadvantaged Students	Limited English Proficient Students
School A	91%	83%	16%	6%	4%
School B	90%	84%	19%	5%	1%
School C	72%	64%	7%	28%	15%
School D	81%	72%	18%	18%	28%

Adapted from New Jersey School Performance Reports (2012)

examiner waits three seconds, tells the student the word, and counts it as an error. The reading passage is ended after one minute, and a bracket is used to show where the student stopped. The examiner scores the assessment by counting all of the words read correctly and dividing by errors. It is important to note that this assessment is administered using computer-based software. Therefore, the examiner simply uses an iPad to touch an incorrect word and to place the bracket at the end of one minute. The mathematical calculations are generated by the software. Shinn and Shinn (2002) wrote a manual discussing the various AIMSweb measures. They suggest, "The R-CBM works very well to help identify at risk students and monitor progress for most students. It is especially useful for accountability as a general outcome reading measure" (Shinn & Shinn, 2002, p. 7).

Curriculum Based Measure Maze (CBM Maze). While the R-CBM measures student reading skill, it may be necessary to assess comprehension when other reading problems are suspected (Shinn & Shinn, 2002). The CBM Maze is a comprehension assessment that can assist in gathering more data on student reading skills. Similar to the R-CBM, it can be given in the fall, winter, and spring of each year. It is a 3-minute reading passage that can be administered in a general classroom, small group, or individual setting. The Maze is a multiple-choice cloze reading task that is given to grade 3. Students are asked to read a 150-400 word passage where the first sentence is intact, but every seventh word after that first sentence has cloze choices. One is the correct answer that will complete the sentence accurately and two are distractor items. After three minutes the students are instructed to stop reading. The assessment is scored by giving students a point for each correct word chosen (Shinn & Shinn, 2002). Reliability scores for the Reading Maze range from .68 to .78 depending on the grade level (AIMSweb, 2012). Validity correlations for the Maze range from .51 to .59 depending on the grade level.

The current data consist of two years, Year 1 and Year 2, worth of literacy scores collected through the AIMSweb system in the fall of each year. In Year 1, R-CBM data were collected in September and January (i.e., fall and winter). Students were removed from their classroom and placed in a separate room with the teacher for a short period of time—generally 3-10 minutes depending on the needs of the child. The teacher read the directions for the assessment and students completed the required tasks. The teacher used an iPad device to track errors on the R-CBM assessment. All teachers administering the assessment were trained by Pearson in September of Year 1, prior to the assessment administration.

The Maze assessment was also administered but only in January of Year 1 and both September and January of Year 2. Intervention teachers, who had been trained on the Maze assessment, held meetings with grade 3 classroom teachers to turnkey the Maze assessment training. The goal of these meetings were to give the classroom teachers proper training on Maze administration in order for classroom teachers to conduct the administration in their homeroom classes. Each classroom teacher in third grade administered the assessment, and the intervention teacher collected and scored each assessment. In the fall and winter of Year 2, AIMSweb data (R-CBM and Maze) were collected once again in both September and January.

Analysis Plan
Our research questions seek to determine if there were mean differences in growth between student performance on the R-CBM and the CBM Maze in Year 1 and Year 2, after the implementation of an RtI service delivery model. Only students receiving intervention in Year 1 and Year 2 were included in the data analysis. While all students were in grade 3, it is important to note that these students were from different cohorts of students. A univariate analysis of covariance (ANCOVA) was conducted across Year 1 and Year 2 first using the winter R-CBM score as the dependent variable and the fall R-CBM score as the covariate. The aim was to compare mean scores in Year 1 to the mean scores in Year 2, while adjusting for the differences in the mean scores based on previous reading abilities. Therefore, we used the fall R-CBM score as the covariate to adjust for the winter reading score

means. This increases the sensitivity of the test of main effects and reduces error (Tabachnick & Fidell, 2007). A second ANCOVA was conducted across Year 1 and Year 2 using the winter Maze score as the dependent variable and the fall R-CBM score as the covariate (no fall Maze score existed in the district at the time of data analysis). Again, we sought to examine the mean differences in Year 1 and Year 2 on the Maze assessment while adjusting for previous reading abilities.

Findings

A univariate analysis of covariance (ANCOVA) was conducted across Year 1 and then across Year 2 first using the winter R-CBM score as the dependent variable and the fall R-CBM score as the covariate. The results indicate no significant main effect of year $F(1,118)=.041$, $p=.839$, $\eta_p^2= .000$. This suggests that, when a covariate is used, there is no difference between student performance on the R-CBM assessment of oral reading fluency in Year 1 and Year 2.

An ANCOVA was conducted across Year 1 and Year 2 using the winter Maze score as the dependent variable and the fall R-CBM score as the covariate. The results indicate a significant main effect of year $F(1,118)=6.24$, $p=.014$, $\eta_p^2=.05$. The mean score in Year 1 was 9.76 with a standard error of .414 and the mean score in Year 2 was 11.34 with a standard error of .470. These results suggest that students performed significantly better on the Maze assessment in Year 2, when using a covariate to account for prior reading performance. Table 3 displays the means for both the R-CBM and Maze scores in Year 1 and Year 2.

Table 3
Grade 3 Mean and Standard Error Scores on the R-CBM and Maze Scores in Year 1 and Year 2

	Year 1		Year 2	
	Mean	SE	Mean	SE
R-CBM	84.40	1.49	83.94	1.69
Maze	9.76	.41	11.34	.47

Discussion

Post-RtI implementation gains were made only on the Maze reading comprehension measure, not in the R-CBM measure in grade 3. Scholin, Haegele and Burns (2013) discussed the need for more reading comprehension intervention strategies, such as summarizing, activating prior knowledge, and questioning in the upper-elementary grades. In addition, other researchers state that the upper-elementary grades require more cognitively complex comprehension instruction (Block & Pressley, 2003). Scholin, Haegele and Burns (2013) conducted research on a small scale with only three students, providing somewhat limited evidence for targeted comprehension instruction within the RtI framework. The current research study, however, found consistent evidence using an entire grade level of children who had received RtI interventions, suggesting that students who received targeted instruction make greater reading achievement gains in comprehension.

It is important to note that Grade 3 students also received the R-CBM measure of ORF. It is unclear why greater reading gains were demonstrated on the Maze measure for this group of students, but parallel improvement was not seen on the Grade 3 R-CBM probe. There are a number of possible explanations to account for the differences observed in the Grade 3 results. First, research in RtI has long considered literacy learning to be a continuum (Stahl & McKenna, 2013), suggesting a cognitive model based on the developmental progression of reading. Stahl and McKenna (2013) introduced a model that is a hierarchy of reading skills, from low-level cognitive skills such as phonemic awareness to high-level cognitive skills such as comprehension. Grade 3 is a pivotal developmental year where the focus of instruction shifts from low-level literacy skills to more complex comprehension skills.

Additionally, while there may be a shift in the developmental progression of reading skills in Grade 3, there may also have been a possible instructional shift that occurred because of the RtI interventions. Paris (2005) suggests that not only is there a developmental progression to these skills but that some of the early literacy skills are constrained, thus making those skills easier to teach. For example, there are a limited number of letters and sounds to teach; hence, when teach-

ers consider planning instruction for struggling readers they revert to teaching the basic skills of early literacy because it is less complex and there is a discrete end to the skill (Stahl & McKenna, 2013). In comprehension instruction skills are not constrained to limitations, rather instruction focuses on developing strategic readers who can use a variety of strategies across multiple texts. There are so many complex cognitive skills that interventionists could (and should) teach to a struggling third grade reader. This is a complex and overwhelming task.

Perhaps the RtI model, which offers teachers more of an opportunity design intervention instruction based on student need, empowers the teacher to plan more explicit comprehension instruction where the invisible can become visible (Stebick & Dain, 2007). Also, recall that the RtI model that the district implemented divides intervention courses into groups: Phonemic Awareness, Phonics/Word Study, Fluency, and Comprehension/Vocabulary. A child who is placed into the Comprehension course should not necessarily be receiving phonics instruction—therefore, the teacher must plan for comprehension interventions. Specifically, the school district now has children placed in these reading courses in Year 2. Prior to Year 2, students were enrolled in a Reading Support course where teachers may have reverted to teaching constrained, basic skills because it was easier (Paris, 2005; Stahl & McKenna, 2013). However, these teachers are now empowered to teach comprehension because it is part of the RtI model and they can remove themselves of the need to teach all literacy skills. In essence, the RtI model would advocate for the targeted nature of instruction (Fuchs & Fuchs, 2007), rather than breadth of instruction.

Lastly, research on middle school students further suggests that explicit comprehension instruction during upper-elementary grades has a positive impact on student comprehension (Faggella-Luby & Wardwell, 2011). It can be assumed that teachers in Year 2 taught using more explicit comprehension strategies based on Appendix A. These explicit strategies could have had an impact on comprehension as measured by the Maze.

Limitations to the Current Study

There are limitations to the study. First, the data set was warehoused in a database in the school district. We noted that some of the data were unavailable to be included in these analyses. It is important to understand the school districts do not necessarily store data with the intention of using it for publication in a research study; therefore, there are inherent issues with the clarity of the data set.

Also, there are limitations to the findings in regard to the increase of Maze scores in Year 2. There is no way of knowing exactly what intervention course or group in which grade 3 students were placed. The secondary data that were received from the school district did not identify specific students or their specific intervention courses. It is known, however, that approximately half of the Grade 3 class was placed in a comprehension and vocabulary course where comprehension instruction was the targeted skill. The other half of Grade 3 students were placed in either phonics or fluency classes that, theoretically, did not focus on comprehension instruction. Ideally, further analyses should be conducted to see if there are differences in Maze scores in each of these groups of students, provided that individual student placement was recorded.

An additional limitation to this study is the lack of classroom observation. Appendix A shows the skills, strategies, resources, and techniques that should be taught at this district at each grade level for each RtI targeted course. However, no systematic classroom observations of these teaching techniques were conducted. It was an administrative directive to identify students who required RtI services and to subsequently divide students into these targeted groups, and this was evidenced through enrollment rosters. Thus, it is difficult to conclude that it was the specific implementation of teaching explicit comprehension strategies that is the primary contributor to increased scores in Year 2 on the comprehension assessment.

The current study does not allow positive inferences to be made regarding the causality of RtI implementation and increased reading achievement as measured by the Maze. This was not a

controlled experimental (or quasi-experimental) research design and inferential statements regarding the outcomes of student achievement cannot be made with any degree of plausibility. In order to be able to make stronger inferential statements regarding these outcomes, more controlled experimental design research should be used to control for confounding variables.

Directions for Future Research

Based on the limitations of the data set used in the current research, further research should be conducted in this area to continue examining reading achievement outcomes in comprehension. This research provides some evidence that implementation of RtI results in changing student outcomes.

It would be interesting to follow students who are placed into a comprehension instructional group based on Appendix A to see if their reading improvement differs from other instructional groups. A longitudinal study of this nature would be able to answer questions regarding student reading achievement and the targeted nature of comprehension instruction within the RtI model.

The conclusions that can be drawn are limited because there is no systematic observational data that teachers changed instruction in the classroom to be more targeted and tiered. Thus, future research should examine effectiveness—and individual differences in effectiveness—of RtI implementation using student scores in conjunction with observation protocols to see instruction as it is occurring in the classroom. The RtI model of targeted and tiered instruction demands that instruction within these tiers be flexible to meet the needs of students. These observations could act as evidence that instructional delivery coincides with the model of RtI instruction.

References

AIMSweb®. (2012). *AIMSweb technical manual*. Pearson, NCS. Retrieved from: https://aimsweb.pearson.com/downloads/AIMSweb_TM.pdf

Block, C.C., & Pressley, M. (2003). Best practices in comprehension instruction. In L.M. Morrow, L.B. Gambrell, & M. Pressley (eds), *Best practices in literacy instruction* (2nd ed., pp. 111-126). New York, NY: Guilford.

Cambourne, B. (2002). Holistic integrated approaches to reading and language arts instruction: The constructivist framework of an instructional theory. In A. Farstrup & J. Samuels (eds.), *What research has to say about reading instruction* (3rd ed., pp. 205-242). Newark, DE: International Reading Association.

Duke, N.K., & Pearson, P.D. (2002). Effective practices for developing reading comprehension. In A. Farstrup & J. Samuels (eds.), *What research has to say about reading instruction* (3rd ed., pp. 243-280). Newark, DE: International Reading Association.

Faggella-Luby, M., & Wardwell, M. (2011). RtI in a middle school: Findings and practical implications of a tier 2 reading comprehension study. *Learning Disability Quarterly*, *34*(1), 35-49.

Fisher, D., & Frey, N. (2010). *Enhancing RtI: How to ensure success with effective classroom instruction and intervention*. Alexandria, VA: ASCD.

Flesch, R.F. (1955). *Why Johnny can't read? And what you can do about it*. New York, NY: Harper Collins.

Fuchs, L.S., & Fuchs, D. (2007). A model for implementing responsiveness to intervention. *Teaching Exceptional Children*, *39*(5), 14-20.

Gallagher, K. (2004). *Deeper reading*. Portland, ME: Stenhouse Publishers.

Glover, T.A., & DiPerna, J.C. (2007). Service delivery for Response to Intervention: Core components and directions for future research. *School Psychology Review, 36(4)*, 526-540.

Graves, A.W., Duesbery, L., Pyle, N.B., Brandon, R.R., & McIntosh, A.S. (2011). Two studies of tier II literacy development: Throwing sixth graders a lifeline. *The Elementary School Journal, 111*(4), 641-661.

Individuals with Disabilities Educational Improvement Act. (2004). Pub. L. No 108-446, 118 Stat. 2807. Retrieved on July 27, 2013 from http://www.copyright.gov/legislation/

pl108-446.html

James-Burdumy, S., Deke, J., Lugo-Gil., J., Carey, N., Hershey, A., Gersten, R., Newman-Gonchar, R., Dimino, J., Haymond, K., & Faddis, B. (2010). *Effectiveness of selected supplemental reading comprehension interventions: Findings from two student cohorts.* NCEE No. 2010–4015 (Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, US Department of Education).

Keene, E., & Zimmerman, S. (2007). *Mosaic of thought: The power of comprehension instruction, 2nd Edition.* Portsmouth, NH: Heinemann.

New Jersey School Performance Reports. (2013). Retrieved on November 15, 2014 at http://education.state.nj.us/pr/

Partnership for Assessment of Readiness for College and Careers (PARCC). (2015). Retrieved from: http://www.parcconline.org.

Pearson, P.D., & Dole, J. (1987). Explicit comprehension instruction: A review of research and a new conceptualization of instruction. *Elementary School Journal, 88,* 151-165.

Pearson, P.D., & Fielding, L. (1991). Comprehension instruction. In R. Barr, M. Kamil, P. Mosenthal, & P.D. Pearson (eds.), *Handbook of reading research,* vol. II (pp. 815-860). White Plains, NY: Longman.

Pearson, P.D., Roehler, L., Dole, J., & Duffy, G. (1992). Developing expertise in reading comprehension. In J. Samuels & A. Farstrup (eds.), *What research has to say about reading instruction* (2nd ed., pp145-199). Newark, DE: International Reading Association.

Pressley, M. (2001). Comprehension instruction: What makes sense now, what might make sense soon. *Reading Online, 5*(2). Retrieved from http://www.readingonline.org/articles/art_index.asp?HREF=/articles/handbook/pressley/index.html

RAND Reading Study Group. (2002). *Reading for understanding: Toward an R&D program in reading comprehension.* Santa Monica, CA: RAND Corporation. Available from www.rand.org/publications/MR/MR1465

Robinson, G.G., Bursuck, W.D., & Sinclair, K.D.

(2013). Implementing RtI in two rural elementary schools: Encouraging beginnings and challenges for the future. *Rural Educator, 34*(3), 1-9.

Routman, R. (2003). *Reading essentials: The specifics you need to teach reading well.* Portsmouth, NH: Heinemann.

Scholin, S.E., Haegele, K.M., & Burns, M.B. (2013). A small-group reading comprehension intervention for fourth- and fifth-grade students. *School Psychology Forum*, *7*(2), 40-49.

Shepherd, K., & Salembier, G. (2010). Leading, learning and literacy: Implementing a response to intervention approach in the riverside elementary school. *New England Reading Association Journal, 46*(1), 38-48.

Shinn, M.R. & Shinn, M.M. (2002). *AIMSweb® training workbook: Administration and scoring the Reading Maze for use in general outcome measures.* Pearson. Retrieved November 22, 2014 from https://aimsweb.pearson.com/downloads//AdminandScoringReadingMAZE10292002.pdf

Stahl, K.A.D., & McKenna, M.C. (2013). *Reading assessment in an RtI framework.* New York, NY: Guilford Press.

Stebick, D.M., & Dain, J.M. (2007). *Comprehension strategies for your K-6 literacy classroom: Thinking before, during, and after reading.* Thousand Oaks, CA: Corwin Press.

Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed.). New York, NY: Pearson Education.

Wanzek, J., Roberts, G., Otaiba, S.A., & Kent, S.C. (2014). The relationship of print reading in tier I instruction and reading achievement for kindergarten students at risk of reading difficulties. *Learning Disability Quarterly*, *37*(3), 148-160.

White, R.B., Polly, D., & Audette, R.H. (2012). A case analysis of an elementary school's implementation of response to intervention. *Journal of Research In Childhood Education*, *26*(1), 73-90.

Wilhelm, J.D. (2001). *Strategic reading: Guiding students to lifelong literacy 6-12.* Portsmouth, NH: Heinemann.

Williams, J. (2002). Reading comprehension strategies and teacher preparation. In A. Farstrup & J. Samuels (eds.), *What research has to say about reading instruction* (3rd ed., pp. 136-161). Newark, DE: International Reading Association.

Zemelman, S., Daniels, H., & Hyde, A. (2005). *Best practice: Today's standards for teaching and learning in America's schools.* Portsmouth, NH: Heinemann.

APPENDIX A

Tier 2 Instructional Groups

Focus Group Course	Assessment	Instructional Strategies	Materials/Resources	Time & Duration	Setting Size
Phonemic Awareness II • Rhyme • Alliteration • Sentence segmentation • Syllables • Onset & Rime	Developing Phonemic Awareness in Young Children- Phonological Assessment DRA Word Analysis	Rhyming Words activities Choral reading of poems and nursery rhymes Clapping sounds heard Marking place sound is heard in word	Developing Phonemic Awareness in Young Children Poems Nursery Rhymes Project READ Spelling Through Phonics Words Their Way- DVD Word Jurneys Heinmann Phonics- K-2 Making Words Road to the Code Reading A-Z	3 days out of a 6 day cycle 20 minutes	6-8 students
Phonics and Word Study II • Letter recognition • Letter-sound correspondence • Onset & Rhyme • Word Study • Syllable patterns • Morpheme structures	DRA Word Analysis Project READ Unit/Book Assessments	Guided Reading Plus- Word Study Strategies Making and Breaking Words Changing letters in word to make new words- Ex: bat to rat to chat to rut Words Their Way- DVD Activities	Developing Phonemic Awareness in Young Children Poems Nursery Rhymes Project READ Spelling Through Phonics Words Their Way- DVD Word Jurneys Heinmann Phonics- K-2 Making Words Road to the Code District Word Study Program (preteach &reteach) I've Dibel'd , Now What Reading A-Z	3 days out of a 6 day cycle 20 minutes	6-8 students
Fluency II • Letter recognition • Letter-sound correspondence • High frequency words • Oral reading	NAEP Oral Reading Fluency Scale- Timed Assessment	Guided Reading Plus- Word Study Strategies Making and Breaking Words Practice with Project Read phrases and short passages Rereading familiar text Raz Kids Fluency Have students read books for younger grades and record on iPad	Guided Reading Plus- Word Study Strategies Project READ Raz Kids Reader's Theatre Fluency Passages Poems Fluency Apps Word Callers Reading A-Z	3 days out of a 6 day cycle 30 minutes or 20 minutes (depending on focus)	6-8 students

Comprehension and Vocabulary II • Word identification • Word meaning • Word categorization • Word structure (root/base) • Sentence structure • Story structure • Monitoring for meaning • Main idea, synthesis, and summarizing • Strategy Instruction	DRA Progress Monitoring Teacher's College Reading Assessment?	Guided Reading Plus-Writing Portion Written and oral retellings Reader's response notebooks Instructional read alouds Model integrating strategy that you use when reading • How do I determine if I need to use a strategy? • What strategy will I use?	Early Success Soar to Success Graphic Organizers Interventions that Work Raz Kids Reading A-Z Learn Zillion Readworks-Nonfiction Newsela	6 days out of a 6 day cycle 30 minutes	12-15 students

TIER 3 Instructional Groups

Focus Group Course	Assessment	Instructional Strategies	Materials/Resources	Time & Duration	Setting Size
Phonemic Awareness III • Rhyme • Alliteration • Sentence segmentation • Syllables • Onset & Rime	Reading Recovery-Observation Survey Project READ Unit and Course Assessments	Reading Recovery Lesson format: • Familiar Reread • Running record • Word Work • Writing • New book Activities from Project READ & FCRR	Reading Recovery Road to the Code Project Read Developing Phonemic Awareness in Young Children Apps and Websites Florida Center for Reading Research (FCRR)	6 days out of a 6 day cycle 30 minutes	1-3 students
Phonics and Word Study III • Letter recognition • Letter-sound correspondence • Onset & Rhyme • Word Study • Syllable patterns • Morpheme structures	Project READ Unit and Course Assessments DRA Word Analysis	Reading Recovery Lesson Format Activities from Project READ & FCRR Poems	Reading Recovery Road to the Code Project Read Apps and Websites *I've Dibel'd Now What?* Fountas & Pinnell- K-2 Phonics Reading A-Z	6 days out of a 6 day cycle 30 minutes	1-3 students
Fluency III • Letter recognition • Letter-sound correspondence • High frequency words • Oral reading	NAEP Fluency Scale	Reading Recovery Lesson Format Repeated readings Paired readings Poems FCRR Activities Have students read books for younger grades and record on iPad	Reading Recovery Project Read Fluency Apps- Raz Kids Fluency	6 days out of a 6 day cycle 30 minutes	1-3 students

TIER 3 Instructional Groups (Cont.)

Focus Group Course	Assessment	Instructional Strategies	Materials/Resources	Time & Duration	Setting Size
Comprehension and Vocabulary III • Word identification • Word meaning • Word categorization • Word structure (root/base) • Sentence structure • Story structure • Monitoring for meaning • Main idea, synthesis, and summarizing	DRA	Reading Recovery Lesson Format Reciprocal Teaching strategies Oral and written retellings Story summary Guided Reading Plus Lessons	Reading Recovery Early Success Soar to Success Graphic Organizers Learn Zillion Interventions that Work Raz Kids *Leveled Literacy Intervention– Grade 2 Pilot*	6 days out of a 6 day cycle 30 minutes	1-3 students