

**PRE-SERVICE TEACHERS' KNOWLEDGE OF READING AND
ASSESSMENT FOR PROVIDING DIFFERENTIATED INSTRUCTION TO
STRUGGLING READERS AND HOW THIS KNOWLEDGE RELATES TO
THEIR PERCEPTIONS FOR THE USE OF RETENTION**

A Dissertation

by

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ABSTRACT

The purpose of the present study was twofold: (1) to examine what preservice teachers (PSTs) understand about reading and assessment processes within the RTI framework to assist struggling readers; (2) to determine whether a relationship exists between PSTs' knowledge of reading and assessment to inform instruction differentiation and their perceptions regarding retention. Participants included 150 PSTs. Groupings of students included both the number of reading courses and the number of assessment courses taken. A survey was administered, which included three attitude measures using Likert-type items and multiple-choice items to assess knowledge. The three attitude measures required PSTs to rate their perceptions in the following areas: (a) use of grade retention, (b) interventions to assist struggling readers, and (c) confidence in using assessments and assessment data common to RTI models. The multiple-choice section of the survey consisted of items representing three categories – knowledge of reading for instruction; knowledge of assessment; and knowledge of RTI. Factorial MANOVAs were computed to examine the effect of the number of courses taken in reading and the number of courses taken in assessment on PSTs' perceptions and knowledge.

Statistically significant findings were found on the tests of between-subject effects for the number of courses taken in both reading and assessment and PSTs' knowledge of reading instruction. PSTs' knowledge of reading instruction was found to be significantly higher for those who reported taking more than two reading courses than

for those who reported taking two courses or less. The opposite finding was evident for assessment courses taken. PSTs' knowledge of reading instruction was found to be significantly higher for those who reported taking only *one assessment course* than for those who reported taking more than one course in assessment. Correlational analysis found a significant, moderate, positive correlation between PSTs' knowledge of reading instruction and their knowledge of assessment. A significant, positive, but small correlation was also found between PSTs' perceptions related to grade retention and their knowledge of RTI.

DEDICATION

To Carolyn Taylor-Whitt for her unconditional love and support.

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CHAPTER I

INTRODUCTION

Through advances in research, much has been learned about teaching beginning reading skills; however, despite this knowledge, the number of first-grade students being retained (repeating a grade) primarily due to reading difficulties is surprisingly high. Nationally, during the early elementary grades, a higher percentage of first-graders are retained. According to the U.S. Department of Education's Civil Rights Data Collection for 2009-2010, of the students retained in Grades 1-6, 34% were first-graders, versus 18% or less for students in the other grades (U.S. Department of Education's Office for Civil Rights [OCR], 2009-2010; Warren & Saliba, 2012; West, 2012). This same trend is evident in the State of Texas. In kindergarten through sixth grade, for the 2011-2012 academic school year, the highest percentage of students retained was in the first grade (4.8%). According to the Texas Education Agency (2013), retention rates were higher for first-grade children identified as at risk (6.4%) than for first-graders in the state overall (4.8%). In Texas, a student in grades kindergarten through grade 3 who performs unsatisfactorily on a screening assessment for reading given during the school year will be determined to be at risk. Studies have inferred that retention is frequently utilized as an intervention for struggling first-grade readers (Jimerson & Ferguson, 2007; Wilcox, Murakami-Ramalho, & Urick, 2013).

Murray, Woodruff, and Vaughn (2010) examined the relationship between retention in the area of reading and an educational approach called Response to

Intervention (RTI) that seeks to intervene early when academic struggles are noted in students. The RTI process involves universal screening, a tiered system of increased intervention intensity to address problem areas, and progress monitoring to ensure that the intensified academic efforts are succeeding. In their study, Murray, Woodruff, and Vaughn found that the retention rate decreased 47% for first-grade students involved in an RTI approach. Their research results prompt the question of whether the lack of understanding in how to use assessment results to differentiate reading instruction for struggling readers increases educators' perceptions that retention is an appropriate intervention. One purpose of this dissertation study was to determine what preservice teachers (PST) understand about reading (pedagogical content knowledge) and assessment processes (in both the realms of administration and interpretation) within the RTI framework to assist struggling readers. The other purpose was to determine whether a relationship exists between the preservice teachers' knowledge of reading and assessment to inform instruction differentiation and their perceptions regarding retention.

Definitions

Formative Assessment. Formative assessment is frequent and ongoing assessment for the purpose of modifying instructional practices to meet the needs of students (Black & Wiliam, 1998).

Morphology. Morphology is the study of word formation patterns, including prefixes and suffixes (Aaron, Joshi, & Quatroche, 2008; Birsh, 2011).

Orthography. Orthography is how a language is represented visually in writing

(Aaron et al., 2008).

Phonology. Phonology is the study of speech sounds in a language (Aaron et al., 2008).

Progress monitoring. Progress monitoring is frequent and routine assessment of academic progress, the purpose of which is to establish whether students are benefitting from instruction and, if not, to plan more effectively (Mellard & Johnson, 2008).

Response to Intervention (RTI). RTI is a process that incorporates instruction, assessment, and a tiered system of intervention to identify students early in the educational process who struggle academically and then to provide research-based interventions to increase their chances for success (Mellard & Johnson, 2008).

Screening. Screening is a process that uses quick, reliable instruments administered to all students at a determined grade level for the purpose of identifying children who show risk factors for future reading difficulties.

Social Promotion. Social promotion is the practice of advancing a student to the next grade level despite the student not having met established requirements (Frey, 2005).

Background

Response to intervention. Before the most recent reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA 2004), which incorporates an RTI approach, research was unveiling important information about necessary components for reading development and literacy instruction. The Connecticut Longitudinal Research Study (Shaywitz, 2003) brought to the forefront the

importance of early intervention for students at risk for future reading problems. Another important study (Juel, 1988) cautioned that if intervention for reading difficulties had not occurred by the end of second grade, those difficulties likely would continue throughout a student's school career. In 1997, the U. S. Congress established the National Reading Panel to investigate effective research-based methods for teaching reading. Three years later, the 14-member panel (NICHD, 2000) outlined five skill areas – phonological awareness, phonics, fluency, vocabulary, and text comprehension – as key elements for reading development. Additionally, discussions were occurring nationally about the validity of comparing intelligence quotient (IQ) with academic achievement as the means of identifying specific learning disabilities (Berdine, 2003).

The No Child Left Behind Act of 2001 incorporated research on the importance of early reading instruction into public schools as it provided monies for the implementation of Reading First, a program to assist school districts in significantly reducing reading achievement gaps by establishing research-based, comprehensive reading instruction in kindergarten through third grade. The Reading First Initiative in Texas consisted of professional development for teachers in scientifically based reading instruction, a tiered system for intervention, and accountability through ongoing screening, diagnostic, and progress-monitoring assessments (University of Texas System/Texas Education Agency, 2005). Subsequently, the Texas Legislature passed a law (TEC 28.006, 2005) requiring that early literacy assessments be administered to all kindergarten through second-grade students to identify those students at risk for dyslexia or other reading difficulties. Once identified, the students were to receive intervention.

With the reauthorization of IDEA in 2004 came major changes in how learning disabilities were identified. The IQ/achievement discrepancy approach no longer was mandated, and provisions for using scientific, research-based interventions as part of the eligibility process for learning disabilities were stipulated. Currently, most states incorporate use of RTI as an eligibility component for identification of specific learning disabilities (Berkeley, Bender, Peaster, & Saunders, 2009; Zirkel & Thomas, 2010). RTI “integrates assessment and intervention within a multi-level prevention system to maximize student achievement” (National Center on Response to Intervention, 2010, p. 2). The use and interpretation of assessment data for making instructional decisions are key foundational components within the RTI framework (Gersten et al., 2009; Hoover, 2011; Hughes & Dexter, 2011; International Reading Association, 2010; NASDSE, 2005). Use of RTI within a school environment requires knowledge and skills in “assessments and interventions that educators rarely conducted a decade ago” (Fuchs, Fuchs, & Compton, 2012, p. 264).

Teacher knowledge of language components for teaching reading. The National Reading Panel’s report (NICHD, 2000) provided information about critical literacy skills to be included during reading instruction; however, studies spanning more than a decade (Moats, 1994, 2009; Bos et al., 2001; Piasta et al., 2009; Washburn, Joshi, & Binks-Cantrell, 2011) consistently have noted the lack of teacher knowledge in these literacy areas for adequate instruction in reading.

On an *Informal Survey of Linguistic Knowledge* completed by a group representing reading teachers, classroom teachers, special education teachers, speech-

language pathologists and graduate students, Moats (1994) found insufficient knowledge related to language structure for explicitly teaching either beginning readers or children with reading disabilities. In a follow-up to Moats (1994), a study was conducted with both preservice and inservice educators (Bos et al., 2001), the purpose of which was to acquire information about the participants' knowledge of language structure; it also was to examine their perceptions related to current research findings in the area of reading. Both groups in this study included educators representing general education and special education. Results revealed that neither group was able to correctly answer almost half the questions on a survey related to language structure.

Piasta et al. (2009) examined the relationship between first-grade teachers' knowledge about language and concepts of early literacy and how that knowledge impacted actual classroom instruction as well as student progress. The study resulted in several important findings. The authors reported that the repercussion on student progress was not associated with teacher knowledge per se, relating instead to the amount of *time* teachers with stronger knowledge of language structure spent providing explicit instruction to their students. Teachers with stronger scores on an assessment of their understanding of phonology, English orthography, and morphology, and who spent more time in explicit decoding instruction, had students with greater growth in word-reading skills. Teachers with low knowledge scores, who spent more time in explicit decoding instruction, had students with weaker scores. Of concern was that the teachers with lower scores were observed providing inaccurate examples during instruction and were less able to attend to and respond appropriately to student errors.

A more recent study by Washburn et al. (2011), consisting of mostly elementary teachers, resulted in findings similar to those from the study by Moats (1994), conducted more than fifteen years earlier. More than half the teachers in the newer study had difficulty counting phonemes in complex syllables (*through* – 62%; *brush* – 75%), and only 29% were able to correctly define phonemic awareness. The authors reported that the teachers were more successful on items requiring implicit, rather than explicit, knowledge.

Studies with special education teachers as participants contained similar findings. On a measure designed to assess explicit phonemic awareness knowledge, Spencer, Schuele, Guillot, and Lee (2008) found that speech-language pathologists were more proficient than other educators involved in the study, which included kindergarten and first-grade teachers, reading teachers, and special education teachers. The authors also noted that the reading and special education teachers did no better than the kindergarten and first-grade teachers. Another study (Brownell et al., 2009) that examined beginning special education teachers' knowledge of teaching reading and their instructional practices, established that the teachers had stronger classroom management skills than instructional skills in reading. The authors speculated that might be because the kindergarten-through-Grade 12 certification most special education teachers receive provides more generalized than specialized training. Additionally, the authors indicated these results could be caused by a lack of sufficient practice in the teachers' preparation programs. An observation study (Swanson & Vaughn, 2010) of special education resource teachers providing reading instruction for second- to fifth-grade students noted

whole-group instruction as being the most common, with fewer than 1% of the activities allocated to phonological awareness skills, even though the students had significant word-level reading disabilities. Also observed was comprehension instruction comprised of mostly low-level questioning. The authors suggested that students would have benefitted from instruction that provided opportunities to apply their phonics instruction to the reading of words in text.

A qualitative study by Leko and Brownell (2011) included some insightful findings as six special education preservice teachers were observed and interviewed throughout a semester practicum as they provided instruction to students with learning disabilities in reading. Several of the university students indicated they did not fully appreciate the training they received from their reading courses until they worked with a knowledgeable cooperating teacher utilizing the training and/or until they had to draw on their knowledge in working directly with the students. One of the participants stated:

“Before this semester, I thought phonemes, phonics – aren’t they all the same? I had heard all the concepts in my reading course, but I really didn’t know what they meant. But now I know what it all means, and I can do it myself. I totally attribute that to Mrs. Monroe (the students’ cooperating teacher)” (p. 239).

Because of RTI and the importance of the Tier 1 level of instruction in general education, both general and special education teachers need to have the knowledge and ability to correct student errors, use appropriate examples, and explicitly explain concepts (Moats, 2009). This requires a teacher with a strong knowledge of basic language structure.

Statement of Problem

In an RTI framework, after administration of a universal screening instrument, students found to be at risk for reading difficulties are to receive scientifically, research-based intervention. These students should have their progress frequently assessed to determine that they are on track with correcting their reading difficulties. If teachers do not understand how to use results of assessments administered and if they lack knowledge in critical foundational components of reading needed to plan effective intervention, do those two factors impact teachers' beliefs and perceptions related to retention?

Research Questions

This study attempted to answer the following research questions:

1. What are preservice teachers' perceptions related to the effectiveness of grade retention? Is there a difference in perception based on the number of reading courses preservice teachers have taken? Is there a difference in perception based on the number of courses in assessment taken?
2. What interventions do preservice teachers consider most effective at keeping struggling readers from being retained? Is there a difference in teacher perception based on their coursework in reading and assessment?
3. What is the perceived confidence of preservice teachers for engaging in various assessment activities related to RTI? Is there a difference based on their coursework in reading and assessment?
4. What is preservice teachers' pedagogical content knowledge of early reading

to assist in the use of assessment data for planning instruction for students considered at risk for reading difficulties? Is there a difference in teacher knowledge based on their coursework in reading and assessment?

Conceptual Framework

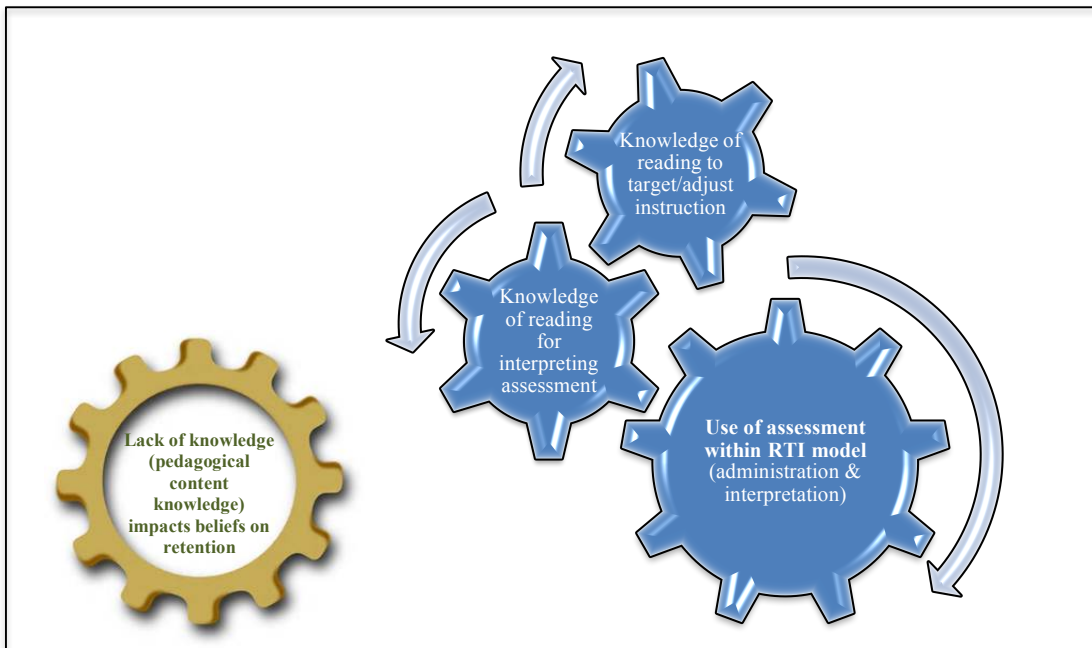
Shulman (1986) theorized three categories of content knowledge for teaching: content knowledge (knowledge of subject matter); pedagogical content knowledge (being able to use what is known about the subject for teaching); and curricular knowledge (knowledge of various materials for teaching subject matter). The first two categories were integral to this research study. Teachers need to have a thorough knowledge of how reading develops as well as the components of reading instruction that are critical for teaching students to read (content knowledge). Additionally, teachers need to know *how* to impart this knowledge to their students (pedagogical content knowledge). Teachers' understanding of the content must be such that they know *when* students make errors, *why* students make the errors they do, and *how* to modify and adapt instruction for learning to occur (Maclellan, 2008).

Assessment is intertwined with pedagogical content knowledge (Brookhart, 2011). As seen in Figure 1, in order to interpret results of students' assessment information, the teacher must not only have knowledge of the assessment (both for administering as well as interpreting), but an understanding of the reading skills that are being measured and how to use students' assessment results to target and adjust instruction. This is a continuing, ongoing process within a response to intervention model. It is assumed that teachers who do not have either the knowledge of assessment

or a thorough knowledge of reading, will be more apt to believe that having a student repeat a grade will be beneficial and substitute for an appropriate intervention (Wilcox et al., 2013).

Figure 1.

Cycle of Assessment, Interpretation, and Knowledge of Subject Matter Within a RTI Model



Significance of the Study

No study of which the author is aware has considered whether preservice teachers' knowledge in the use and interpretation of assessment data to plan targeted intervention for students at risk for reading difficulties significantly impacts their perceptions related to grade retention.

CHAPTER II

REVIEW OF THE LITERATURE

Retention

Social scientists generally acknowledge that the practice of having students repeat a grade results in negative outcomes for them later (Beebe-Frankengerger, Bocian, MacMillan, & Gresham, 2004; Frey, 2005; Gottfried, 2012; Jimerson & Ferguson, 2007; Jimerson & Kaufman, 2003; NASP, 2011; Peterson & Hughes, 2011; Tingle et al., 2012; Xia & Kirby, 2009). Students who are promoted demonstrate higher academic achievement than do students who have been retained (Gottfried, 2012; Jimerson & Ferguson, 2007). Even if benefits of retention are indicated, studies have found those decrease over time (Moser et al., 2012; Tingle et al., 2012; Xia & Kirby, 2009). If a student is retained once, this does appear to reduce the possibility for the student to be retained again in the future, but it does not reduce the future possibility for being identified for special education (Moser et al., 2012). One study (Beebe-Frankengerger et al., 2004) compared differences among second-graders, academically and socio-behaviorally, based on decisions to either promote or retain the students. A significant finding was that more than 50% of the students who qualified to receive special education services by the end of their second-grade year had been retained at least once before being considered for a referral for special education. The authors of this study surmised that rather than providing more intensive instruction to the struggling students, retention was being used as a prereferral intervention.

Characteristics of retained students. Students who are retained most commonly are male, young for their age, of an ethnic minority (i.e., African-American or Hispanic), and/or of lower socio-economic status (Frey, 2005; Powell, 2010; Tingle et al., 2012; Xia & Kirby, 2009). Students who have experienced grade retention are more likely to drop out of school (Frey, 2005; Jimerson & Kaufman, 2003; Jimerson & Ferguson, 2007; Xia & Kirby, 2009) and have a greater rate of absenteeism (Beebe-Frankenberger et al., 2004).

Retention and social promotion. Ending social promotion seems to have become popular politically, with many states (including Texas) passing laws requiring retention of students who do not pass state mandated assessments (Rose & Schimke, 2012). A study by Hughes, Chen, Thoemmes, and Kwok (2010) looked specifically for any correlation between Texas students retained in first grade and passing the Texas Assessment of Academic Skills (TAKS), a state-mandated test, in third grade. Their results suggested that students retained in first grade were more likely (64.6%) to pass the reading portion of the TAKS in third grade than students who had been promoted (55.3%). This led the authors to conclude, “retention in the early grades may increase a student’s chance of successfully meeting the academic challenges of subsequent grades” (p. 180). In a more recent study (Moser et al., 2012), long-term effects of retention versus promotion on the reading achievement of first-grade students were investigated. For first-grade students – both retained or promoted – with comparable risk factors, the authors found an initial advantage in reading achievement for those retained. This advantage, however, was lost over time. At the fifth grade level, the reading scores of

these same students retained in first grade were “no closer to their fifth-grade peers in achievement than they would have been if they had been promoted” (p. 618). Results of this study underscore the lack of validity for retaining students as a means of enhancing future reading achievement.

Peterson and Hughes (2011) compared instructional services provided for low-achieving first-grade students during an initial first grade year with services offered the following year for students either retained in first grade or promoted to second. During the initial first-grade year, students, whether retained or promoted at the end of the year, received the same instruction, with no differentiation for those at risk for being held back to repeat the grade. The following year, the students retained in first grade received fewer instructional services than those given to the students who were considered at risk for difficulty or failure but still promoted to second grade. Results from this study suggest that educators see retention as the “intervention” for the students recommended for retention, rather than “investigating why the student is failing” (p. 162).

Retention and educators’ beliefs. Based on what is now known about retention, why is it still a prevalent practice? Previous studies have reported on educators’ beliefs related to the use of retention and reasons for its continued practice (Range, Pijanowski, Holt, & Young, 2012; Range, Yonke, & Young, 2011; Tomchin & Impara, 1992). Overall, findings confirm that educators believe retention is positive, with a majority of those surveyed indicating they would continue to use retention as an intervention for struggling students (Range et al., 2012).

Various reasons specified by educators for retention include the following: to prevent future failure (Range et al., 2012; Range et al., 2011; Tomchin & Impara, 1992); to allow immature students a chance to catch up (Range et al., 2011; Tomchin & Impara, 1992); to motivate students to attend school (Range et al., 2012); and to increase parental involvement (Range et al., 2012). Educators also report being concerned about their professional reputations in relation to the “kinds” (p. 212) of students they send on to the next grade level (Tomchin & Impara, 1992).

A strong motivator for the practice of retention, particularly for primary grade teachers, is the positive benefits, both academically and socially, they observe in students who have been held back. Although researchers (Wu, West, & Hughes, 2008; Wu, West, & Hughes, 2010) report an initial benefit in both reading achievement scores and psychosocial outcomes for students repeating first grade, these benefits dissolve over time. Other reasons posited for the continued use of grade retention by school personnel include: a gap between what occurs in school environments and what has been learned through research (Reschly & Christenson, 2013); high-stakes testing and district accountability that incorporate policies related to grade-level promotion (Allen, Chen, Willson, & Hughes, 2009; Rose & Schimke, 2012); and the self-fulfilling prophecy of teachers’ observations regarding students’ early literacy skills at the beginning of the school year (Goldstein, Eastwood, & Behuniak, 2014).

Along with beliefs related to retention, educators also have been surveyed about their perceptions of interventions – both effective and ineffective – for reducing the number of children retained (Range et al., 2011; Range, et al., 2012). Educators

identified parental involvement as the most important component in reducing student retention. Other factors indicated to assist in reducing retention were special education placement, additional reading programs, smaller class sizes, direct instruction, and additional tutoring. Interventions perceived by educators as being the least effective in reducing retention include group work; peer tutoring; looping and multiage classrooms; and finally, the use of formative assessment (Range et al., 2011; Range et al., 2012). In contrast, numerous studies stress the importance of using assessment data to determine the reasons a student is experiencing difficulty in order to differentiate instruction or to intervene on his or her behalf (Black & Wiliam, 1998; Denton, Swanson, & Mathes, 2007; Gersten et al., 2009; Hoover, 2011; Johnston, 2011; McCombs-Tolis & Spear-Swerling, 2011; Menzies, Mahdavi, & Lewis, 2008; Watts-Taffe et al., 2012; Wixson & Valencia, 2011).

Assessment

Formative assessment is an integral component within the instructional cycle (Black & Wiliam, 1998) as well as within the RTI process (Mellard & Johnson, 2008). The focus for this study is on the assessments – both use and interpretation – of those involved in a tiered system of support.

Assessments within the RTI framework. Within the RTI framework there are three types of assessments serving different purposes (Mellard, McKnight, & Woods, 2009). The first type is universal screening, which is done with all students in a classroom, preferably at the beginning of the school year, to identify those in need of intervention help (Hosp & Ardoin, 2008; Mellard et al., 2009; Stahl & McKenna, 2013).

Instruments used for screening purposes ideally are quick to administer, measure critical skills, and are able to be repeated (Mellard & Johnson, 2007).

The second type of assessment, diagnostic, provides information regarding a student's strengths and weaknesses in a specific skill area (e.g., phonological awareness or phonics) to assist in planning intervention for the student, or to determine why the student is not responding to such intervention (Mellard et al., 2009; Stahl & McKenna, 2013). These types of appraisals typically are administered individually and can be given at any time in the RTI process.

Progress monitoring, the third type of assessment, assists the teacher in determining whether a student is responding to intervention. Instruments used for progress monitoring should be quick to administer, sensitive to small increments of growth, and able to be frequently repeated (Hosp & Ardoin, 2008; Mellard et al., 2009).

Assessment knowledge and skills for teachers. Because assessment is not only an important component in the RTI process, but a vital skill within the instructional cycle, it is necessary to know what knowledge and skills educators need in order to reduce the number of struggling readers. Teachers need to be aware of the assessments they have access to and their purposes (Wixson & Valencia, 2011). Since universal screening, particularly for the early elementary grades, identifies those students most at risk for reading failure, teachers not only need to understand proper administration, but more importantly, they need to be able to interpret the results to use them for planning instruction. Related to planning, universal screening can assist teachers in determining whether their core instruction is resulting in adequate progress for the majority of their

students in meeting grade level criteria. Additionally, teachers can use the results of universal screening to group students for intervention. Often times, school administrators (both at district and campus levels) incorrectly assume that staff required to give and interpret screening assessments have adequate training to use resulting data to make decisions either related to the instruction for entire classes or for individual students (Ogonosky, 2008).

Diagnostic testing may be required for individual students to pinpoint specific skill areas that are lacking and that require supplemental instruction. In order to use results of diagnostic assessments for planning purposes, teachers need to have an in-depth knowledge of the reading process. Once supplemental instruction begins, teachers need to incorporate progress monitoring at frequent intervals (e.g., every two weeks or once a month) to make sure students are progressing at a sufficient rate to close their learning gap. If not, additional instructional changes may be required or further diagnostic assessments may need to be administered to glean more specific information about a student's skills. Denton, Swanson, and Mathes (2007) investigated the impact of instructional coaching to assist teachers in using assessment to inform instructional decisions. They reported that some teachers did not value data from ongoing progress monitoring assessments because they were not sure how the assessment results connected to the interventions being provided. One teacher was quoted as stating: "I looked at the [progress monitoring graph] but ...it made no sense to me..." (p. 580).

Teacher expertise in the use of assessment is a key instructional skill within the RTI process (IRA, 2010; Johnston, 2011; Wixson & Valencia, 2011). To date, however,

relatively little research has explored teacher knowledge in this area. An early qualitative study (Mayor, 2005) required preservice teachers to develop goals and reflect on them for a class on diagnosis and remediation of reading problems using a case-study approach. Reflections from the preservice teachers revealed they were unable to see the connection between assessment and instruction.

McCombes-Tolis and Feinn (2008) developed a survey that was designed, in part, to investigate the perceptions of teachers (elementary and special education) as to whether they possessed the competencies required by their state to teach reading. Significant findings included: 16% of elementary teachers did not perceive it as their responsibility to teach skills related to early decoding; nearly one-third of both the elementary and special education teachers were uncertain about common characteristics of struggling readers and how best to intervene; and more than one-third of the teachers reported that they did not know how to administer or interpret screening and diagnostic assessments to identify students at risk of failure or to use assessment information to meet students' instructional needs.

Another study (DeLuca & Klinger, 2010) set out to gain insight into teacher candidates' perceptions of their confidence as it related to assessment practices. The participants reported high confidence levels in areas such as statistical properties, types of assessments, and test administration. The authors indicated, however, that the results from the study (e.g., teachers' confidence levels) were more related to assessment *of* learning – knowledge of summative assessment practices, versus assessment *for* learning – knowledge of assessment practices to inform or differentiate instruction.

More recently, Spear-Swerling and Cheesman (2012) developed the *Teacher Knowledge Survey* (TKS), a survey used to examine teacher knowledge for implementing RTI models in reading as well as teachers' familiarity with assessments and interventions. The TKS contained both content- and application-related questions pertaining to the five critical components of reading identified by the National Reading Panel (NICHD, 2000). Questions regarding assessment were also included. The authors found the highest mean scores for surveyed teachers were in the areas of fluency, vocabulary, and comprehension, and that the lowest mean scores were for questions pertaining to assessment and RTI practices. Additionally, items that measured the teachers' application knowledge had the highest proportion of error rates. In this study the authors were also interested in teacher certification differences and whether teachers had obtained code-focused (e.g., involving phonological/phonemic awareness and phonics) professional development. Interesting and perhaps disturbing findings from the study by Spear-Swerling and Cheesman (2012) showed little difference in knowledge level between general education and special education teachers. Although familiar with components of RTI, study participants lacked knowledge to implement these models with their students, particularly in areas related to assessment. Teachers without additional code-focused professional development were not knowledgeable about reading interventions, even though some of those teachers were in schools currently implementing RTI. A positive finding, however, was that teachers who had received code-focused training, even for a brief period, significantly outperformed other

participants without the additional code-focused training on all areas of the survey (i.e., knowledge of reading content, reading application, assessment, and RTI).

Another recent mixed-methods study (Wilcox, Murakami-Ramalho, & Urick, 2013) examined teachers' perspectives on RTI and its implementation; Texas educators were included in the study. The researchers gathered data through the use of questionnaires, focus groups, and semistructured interviews. Teachers reported that they were primarily responsible for providing interventions for at-risk students, but that they had received limited training related to RTI. The majority of teachers perceived themselves as 'fairly confident' (p. 86) in their ability to differentiate instruction to meet the needs of their students but indicated that they felt additional professional development was needed. The authors also found that the teachers appeared knowledgeable in their ability to assess for and identify students in need of early intervention but were not as able to determine instructional strategies to assist the students. Potentially more troubling was the admission by some of the teachers that if they did not know how to intervene to assist a student, retention could be regarded as the intervention of choice. Based on their findings, the authors concluded, "Thus assessment processes become the means to an end, disconnected from student achievement..." (p. 90).

Assessment and RTI implementation. Several studies since the reauthorization of the IDEA (2004) have demonstrated that when assessment information was used to assist in providing appropriate intervention, the incidence of early reading difficulties

were significantly reduced (Abbott et al., 2010; Dombek & Connor, 2012; Gilbert et al., 2013; Menzies & Mahdavi, 2008; Murray, Woodruff, & Vaughn, 2010).

Menziew, Mahdavi, and Lewis (2008) followed the progress of first-grade students at risk for reading difficulties. Assessment was used to place those students into small instructional groups, as well as to look more specifically at their individual needs. Children received explicit instruction in their groups, with data from ongoing progress monitoring used to adjust instructional activities. At the end of the school year, the authors reported that 90% of the students reached grade-level proficiency. Of interest to note from this study were the challenges faced by the staff during their transition to a research-based model. Teachers found it difficult to use the progress-monitoring data, primarily because they “were not convinced of the utility of using frequent assessment to monitor and adjust student progress” (pp. 74-74). The teachers also reported additional time was needed for collaboration to implement interventions as well as to analyze data and plan accordingly for the intervention groups.

A study by Murray et al. (2010), examined the association between implementing RTI and retaining students in elementary school. The study involved three cohorts of students. At the end of the first year, which was used as the “historical control group” (p. 29), 27 students were retained (5.5%). During the second year, professional development and in-class support were provided to all first-grade teachers, as well as progress monitoring for students identified as at risk. At the end of the second year, 23 students were retained (4.7%). Teacher professional development continued throughout the third and final year of the study, with only 14 students retained (2.9%). Over the

two-year period in which an RTI model was implemented, the retention rate for first grade was decreased by 47%.

Using a randomized-control study design, Dombek and Connor (2012) implemented an intervention known as Individualizing Student Instruction (ISI) to examine the retention rate for first-grade students. The purpose of ISI was to explicitly train teachers in how to use assessment data for differentiating reading instruction. The authors found that students in classrooms of teachers utilizing the ISI intervention were less likely to be retained versus students in control classrooms.

Abbott et al. (2010) investigated the combined effects of retention and small-group intervention for kindergarten and first-grade students over a three-year period. Using universal screening data from the end of the first school year, retained kindergarten and first-grade students were matched with grade-level peers identified as being at risk for reading difficulties. Both groups of students were provided with small-group literacy intervention in addition to core reading instruction. Overall, findings affirmed that retention alone, without increased literacy intervention above and beyond the core reading instruction, was not sufficient to decrease the achievement gap for at-risk students. Gilbert et al. (2013) found similar results. Using a randomized-control research design, first-grade students were identified for need of intervention through universal screening and subsequent progress monitoring to weed out false positives (e.g., students who initially tested as being at risk but who actually were not). The authors implemented a standard protocol model (all children received the same intervention, which was a scripted tutoring program conducted by trained research assistants).

Findings established a small, positive effect size (.19) for the at-risk first-graders provided with supplemental reading instruction.

In conclusion, grade retention is used too often for beginning readers who struggle. An important purpose of RTI is to find students who are at risk in order to intervene before they fall further behind. In order to assist these students, teachers who are able to provide explicit reading instruction and to use data from screening and ongoing progress monitoring to adjust instruction have students that make better academic progress and are less likely to be retained. The next chapter, Chapter III, will discuss methodology for the current research study.

CHAPTER III

METHODOLOGY

One purpose of the current study was to determine what pre-service teachers (PSTs) understand about reading (pedagogical content knowledge) and assessment processes (administration and interpretation) to assist struggling readers. The other purpose was to determine whether a relationship exists between the PSTs knowledge of reading and assessment to inform and differentiate instruction and their perceptions regarding the use of retention.

Study Design

The study design was a quantitative, nonexperimental (Patten, 2009), cross-sectional survey study (Fraenkel & Wallen, 2009).

Participants

The participants were preservice teachers (general and special education) from a university based teacher preparation program located in the southwest region of the United States. A total of 634 students from 10 undergraduate classes were invited to participate. Students were offered incentives for completing the survey. Course instructors who were willing to have their students participate could grant extra credit points for those students who completed the survey, or if extra credit was not offered, students could voluntarily submit their email to be entered into a drawing for an e-gift certificate. Two hundred twenty students completed the survey, which is a response rate of 35%. Based on a meta-analysis of response rates for web-based surveys conducted by

Cook, Heath, and Thompson (2000), 34.6% to 39.6% was the mean response range for the 68 surveys reviewed.

The current study was designed to survey preservice teachers who were in the final semesters of their teacher preparation program in elementary or special education and/or who had taken at least one course in reading assessment. Out of the 220 students who completed the survey, 70 respondents' surveys were excluded from the data analysis. Four of the surveys contained an overwhelming number of skipped items; 52 students were completing certification in middle grade subject areas or secondary English; and 14 had not taken a course in reading assessment. Consequently, the data analysis was performed using completed surveys from 150 respondents.

All but two of the participants were female (99%). Ninety-one percent of the students were working towards certification as EC-6 Generalists (early childhood through sixth grade), and nine percent were working towards certification in special education. Groupings of students included both the number of reading courses and the number of assessment courses taken. Tables 1 and 2 show the groupings for courses taken and the percentage of PSTs in each group. Due to the small number of surveys completed by students majoring in special education, results by area of certification were not analyzed.

Table 1

Number of Reading Courses Taken

Number of reading courses	Percent of respondents
2 courses or less	56%
> 2 courses	44%

Table 2

Number of Assessment Courses Taken

Number of assessment courses	Percent of respondents
1 course	69%
> 1 course	31%

Instrumentation

A survey designed to assess PSTs' perceptions related to retention and their knowledge of assessment and early reading instruction was developed. Development of the survey was based on surveys and questionnaires from the following sources: selected items from *The Teacher Retention Beliefs Questionnaire* (Tomchin, 1989); selected sample items from the TExES Preparation Manual – Generalist EC - 6 (TEA, 2011), and TExES Preparation Manual – English Language Arts and Reading 4-8 (TEA, 2012); selected items from a revised version (Range et al., 2012) of the *Teacher Retention Beliefs Questionnaire* (Tomchin, 1989); selected items from a questionnaire used to

measure PSTs' perceptions of their confidence related to educational assessment knowledge (DeLuca & Klinger, 2010); and selected items from *The Teacher Knowledge Survey* (Spear-Swerling & Cheesman, 2012).

Content validity of the instrument was determined by having two reading specialists (a university professor and a current graduate student) review the survey. These professionals examined whether items on the survey matched the study's research questions and provided input on formatting. Required documents and application were submitted to the Institutional Review Board (IRB). Once approved by the IRB, a pilot study was conducted with undergraduate students enrolled in several sections of a required reading course as part of a university based teacher preparation program. One graduate reading class was also invited to participate in the pilot. According to Thomas (2004), 10 to 30 surveys are needed for pilot testing; 20 surveys were completed. None of the completed surveys from the pilot test respondents were considered in the results.

The pilot survey was composed of three sections. The first section dealt with demographics; the second section involved Likert-type items to gather information regarding PSTs' attitudes related to the use of retention, the use of interventions to decrease retention, and the use of formative assessments; and the third section was composed of 40 multiple-choice items that assessed PSTs' knowledge of reading, assessment, and RTI practices.

Data analysis for the pilot considered reliability (Cronbach's α) of the attitude scales and item difficulty for the multiple-choice questions. Reliability for the scale measuring perceptions related to retention, after the deletion of two items, was .74; the

scale measuring perceptions for interventions to decrease the need for retention, after deleting two items, was .65; and reliability for the scale measuring confidence for utilizing assessments within an RTI framework was .92. According to Ding and Beichner (2009), values ranging from 0.3 to 0.9 for item difficulty are acceptable. Item difficulty for the multiple-choice questions on the pilot instrument ranged from .10 to .95 with an average item difficulty index of 0.46. Two items were revised and two items were deleted.

The survey used in the study consisted of three sections. The first section contained four questions related to demographics, which included gender, area of intended certification, and the number of reading and assessment courses taken.

The second section was comprised of 22 Likert-type items that required respondents to indicate their agreement (1 = agree to 4 = disagree) to statements related to grade retention (i.e., lack of support at home, immaturity, lack of response to intervention, etc.); their perceptions as to the effectiveness (1 = no effect to 4 = great effect) of various interventions for decreasing retention rates (i.e., smaller class sizes, summer school, formative evaluation, etc.); and their confidence (1 = I would benefit from assistance to 4 = very confident) for engaging in assessment activities used within an RTI process (i.e., screening assessment, interpreting results of screening assessment for instruction, changing instruction for lack of lack of progress, grouping students for intervention, etc.).

The third and final section of the survey was composed of 39 multiple-choice items. These items consisted of questions related to both content knowledge and

pedagogical content knowledge linked to critical elements of teaching reading with beginning and struggling students – phonological/phonemic awareness, letter recognition, phoneme-grapheme relationships, and fluency. This section also contained items to gain information about PSTs’ knowledge of RTI, assessment, and interpreting assessment for instruction. The survey results and statistical analyses will be reviewed and discussed in the following chapter.

CHAPTER IV

RESULTS

In the present study, variables from the *Survey of Pre-service Teachers' Perceptions and Knowledge to Inform Reading Instruction* were coded and electronically entered for analysis using the Statistical Package for the Social Sciences (SPSS) software.

Instrument Analysis

The survey included three attitude measures using Likert-type items and multiple-choice questions. A principal components analysis (PCA) was used for the attitude surveys, which measured PST's perceptions related to grade retention, interventions for reducing grade retention, and confidence for engaging in assessments. The suitability of PCA was assessed prior to analysis of the data. Inspection of the correlation matrix showed that all but one variable had at least one correlation coefficient equal to or greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was .77, which can be classified as 'meritorious' according to Kaiser (1974). Barlett's Test of Sphericity was statistically significant ($p < .0005$), indicating that the data were likely factorizable.

The results of PCA revealed six components that had eigenvalues greater than one, which explained 25%, 15.1%, 10.8%, 6.2%, 5.1%, and 4.6% of the total variance (50.8%), respectively. Visual inspection of the Scree Plot indicated that three components should be retained (Cattell, 1966). In addition, a three-component solution

met the a priori criterion. As such, three components were retained. The three-component solution explained 50.8% of the total variance. A Varimax orthogonal rotation was employed to aid interpretability. The rotated solution exhibited simple structure (Thurstone, 1947). The interpretation of the data was consistent with the attitude attributes the survey was designed to measure with strong loadings for confidence items on Component 1, grade retention items on Component 2, and intervention items on Component 3. Component loadings of the rotated solution are presented in Table 3.

A correlational coefficient analysis (Cronbach's α) was performed to examine reliability of the Likert-type items in the survey. Reliability for the confidence items was .93; reliability for the grade retention items was .77; and reliability for interventions to reduce grade retention was .63. These results are consistent with the previously obtained results from the pilot survey.

Table 3

Rotated Structure Matrix for PCA with Varimax Rotation of a Three-Component Attitude Survey

Items	Components		
	1 Confidence	2 Retention	3 Interventions
Q7 – 3	.859	.047	.131
Q7 – 6	.853	.072	-.055
Q7 – 4	.838	.036	-.010
Q7 – 2	.834	-.004	.074
Q7 – 5	.822	-.027	-.114
Q7 – 1	.812	-.048	.120
Q7 – 7	.752	.149	.050
Q7 – 8	.745	.093	.038
Q5 – 4	.004	.760	-.008
Q5 – 5	.086	.738	-.001
Q6 – 4	.004	-.691	.227
Q5 – 1	.034	.684	.031
Q5 – 2	.047	.655	.073
Q5 – 3	.034	.625	.078
Q5 – 6	.042	.609	.079
Q6 – 7	.044	.114	.714
Q6 – 6	.010	-.269	.685
Q6 – 5	-.078	-.022	.616
Q6 – 8	-.024	.128	.532
Q6 – 3	-.009	-.048	.516
Q6 – 2	.049	.080	.493
Q6 – 1	.159	.009	.340

Descriptive Statistics

The three attitude measures requested PSTs to rate their perceptions in the following areas: (a) use of grade retention, (b) interventions to assist struggling readers

and therefore decrease retention rates, and (c) confidence in using assessments and assessment data common in RTI models.

Perceptions regarding grade retention. The first measure was composed of six Likert-type items, which required PSTs to indicate their level of agreement (1 = Agree to 4 = Disagree) related to circumstances for the use of grade retention. Circumstances in which PSTs agreed that retention was appropriate included giving an immature child a chance to catch up ($M=2.23$; $SD=.80$); preventing students from facing daily failure if promoted ($M=2.26$; $SD=.83$); and inadequate response to intervention ($M=2.44$; $SD=.77$). Circumstances in which the PSTs disagreed with the use of retention included holding students back who make passing grades but do not meet grade level standards on early screening instruments ($M=2.75$; $SD=.68$); as a means of providing support in school for a student who does not get support at home ($M=2.48$; $SD=.84$); and holding students back in order to maintain grade level standards ($M=2.62$; $SD=.83$).

Perceptions related to the use of retention were further examined by comparing means between the (a) number of reading courses the PSTs had taken (2 courses or less; > 2 courses) and (b) the number of assessment courses taken (1 course; > 1 course). Among all four groups there was consistent agreement that retention is effective for assisting students who are immature and for preventing students from facing daily failure in the next higher grade. All four groups indicated disagreement for retaining students who make passing grades but do not meet grade level standards on early screening instruments.

Perceptions regarding interventions to assist struggling readers. The second measure, composed of eight Likert-type items, requested PSTs to indicate their perceptions as to the effectiveness (1 = No Effect to 4 = Great Effect) of listed interventions for helping students at risk of reading failure. As a whole, the PSTs rated the provision of additional reading instruction as having the greatest effect for assisting struggling readers ($M = 3.71$; $SD = .53$). Interventions indicated as least effective were grade retention ($M = 2.37$; $SD = .63$) and placement in special education ($M = 2.39$; $SD = .92$).

When analyzed by the number of reading and assessment courses taken, PSTs' perceptions of effective interventions were consistent with the overall results. Additional reading instruction and tutoring were consistently rated as having the greatest effect. Grade retention and special education placement were consistently rated as having a slight effect. Both groups rated formative assessment as having a moderate effect.

Perceptions regarding confidence for engaging in various assessment practices. The third measure, composed of eight Likert-type items, requested the PSTs to indicate their confidence for engaging in various RTI assessment activities (1 = I would benefit from assistance in this area to 4 = Very confident). PSTs rated themselves as somewhat confident (3) in all areas. Confidence in using progress monitoring ($M = 3.05$; $SD = .86$) represented the highest mean and interpreting screening assessment results for instruction ($M = 2.48$; $SD = .87$), represented the lowest mean.

Multiple-choice items. The final section of the survey consisted of 38 multiple-choice questions. The items represented three categories – knowledge of reading, both content knowledge (CK) and pedagogical content knowledge (PCK); knowledge of assessment; and knowledge of RTI. Correct responses were coded as ‘1’ and incorrect responses were coded as ‘0’. The percentage of correct responses for each category will be reviewed, followed by a comparison of means for PSTs by groupings according to the number of reading and assessment courses taken.

Knowledge of reading. The category pertaining to reading knowledge consisted of 19 items. Four questions required specific content knowledge and the other 15 questions required PSTs to use their knowledge of reading to correctly answer student specific situations related to instruction (pedagogical content knowledge). The questions in this category focused primarily on the areas of phonological/phonemic awareness and phonics.

In the area of phonological/phonemic awareness, the question with the highest percentage of correct responses (80%) required pedagogical content knowledge for analyzing spelling errors to identify the student exhibiting the weakest phonemic awareness skills (Q23). The PSTs’ content knowledge is also evident in this area with the majority (76%) correctly identifying a word containing five phonemes and five graphemes (Q10). Of this group of PSTs studying to become early elementary or special education teachers, 24% were unable to correctly count the number of phonemes/graphemes in words (16%) or indicated they did not know (8%). Just over half of the PSTs were able to identify why phonemic awareness is important in learning

to read (Q15, 54%) and to identify phonological awareness as the focus of an activity where the teacher had students clap syllables in simple sentences (Q8, 58%). In contrast, 24% of the PSTs who responded to question 15 indicated phonemic awareness was important for developing reading comprehension. In response to question 8, 18% indicated the phonological awareness activity focused on phonics, and 12% indicated the focus was pragmatics.

Questions related to phonological/phonemic awareness that were answered correctly by *less than half* of the PSTs involved recognition of student characteristics that signaled difficulties with phonemic awareness (Q20, 45%) and selecting an intervention focusing on phonemic awareness after analyzing a student's spelling errors (Q41, 35%) – both requiring pedagogical content knowledge.

On items pertaining to phonics, the highest percentages were seen on pedagogical content knowledge questions requiring PSTs to identify activities to improve letter recognition (Q30, 73%) and decoding of multisyllabic words (Q24, 71%; Q12, 69%). The PSTs had considerably weak scores on content knowledge items that required the identification of a set of words that followed the vowel-consonant-e syllable pattern (Q45, 25%) and an irregular word for reading (Q44, 23%).

The lowest percentage of correct responses was on an item requiring pedagogical content knowledge. PSTs were asked what a first-grade teacher should teach first to best help children develop rapid, automatic word recognition skills (Q22). The correct answer, to use common phonics generalizations to read unfamiliar words, was chosen by 15% of the respondents. Nineteen percent selected the use of a cueing system within the

context of the passage, and 57% selected using sets of flash cards with common sight words.

Knowledge of assessment. The category pertaining to assessment consisted of 13 items, which dealt with understanding the purpose and use for different types of assessment as well as interpretation of assessment information common within the general education classroom. The highest percentage of correct answers on the assessment knowledge items (83%) was obtained on a question related to fluency assessment. It should also be noted that on the previous set of questions (reading knowledge), the PSTs earned a higher percentage of correct answers for selecting an appropriate activity for promoting reading fluency (Q25, 75%).

Two items, both answered correctly by 46% of the respondents, measured PSTs' knowledge of screening instruments. The first item dealt with the use of 'cut-off' scores on screening measures (Q35), and the second item contained a scenario that required interpreting student results from a screening instrument to plan instruction (Q39).

Three items involved diagnostic assessment. Slightly over half of the PSTs responded correctly to questions relating to the purpose for using diagnostic assessments (Q42, 53%) and to the need for implementing diagnostic assessment with a student who exhibits weaknesses in fluency on a screening assessment (Q31, 52%). The third item required respondents to infer that the criterion-referenced assessment referred to was being used as a diagnostic assessment (Q28, 39%).

Two items related to the use of progress monitoring assessments. The question answered correctly by the highest percentage of PSTs (Q46, 41%) involved interpreting

a progress-monitoring graph to make instructional decisions for a student. The other question (Q36), answered correctly by only 19% of the respondents, related to understanding important characteristics of a progress-monitoring instrument. Interestingly, when indicating their confidence for understanding and interpreting screening, diagnostic, and progress monitoring assessments, the majority of the PSTs rated themselves as either somewhat confident or very confident. It appears their confidence overshadows their actual knowledge base for effectively using these common assessment measures.

Other items dealing with assessment asked PSTs to identify the scores recommended for use on norm-referenced assessments (Q21), which was answered correctly by 51% of the respondents; to demonstrate understanding of how analyzing spelling errors can assist in understanding students' knowledge of phonics (Q11), answered correctly by 48%; to show understanding of an informal method for measuring text difficulty (Q13), answered correctly by 29%; and to establish an understanding of the importance of standardization in test administration (Q43), answered correctly by only 8% of the respondents.

Knowledge of RTI. The category pertaining to RTI consisted of seven items, which dealt with understanding its purpose and how it is typically organized within a school setting. The question with the highest percentage of correct responses (Q26, 58%) reflected PSTs understanding that the greatest advantage of the RTI model is to assist struggling students early. The PSTs showed some understanding of the purpose of the Tier 2 level of intervention (Q18), with 57% responding correctly. Questions related

to the importance of Tier 1 instruction (Q33), and to how students with learning disabilities are conceptualized within the RTI model (Q34), were both answered correctly by only 31% of the PSTs and reflect the lowest percentages of correct responses in this area. Of the PSTs who responded incorrectly to the question pertaining to the conceptualization of learning disabilities within RTI, 19% indicated students with learning disabilities were those with a significant discrepancy between intelligence and reading achievement.

Results of multiple-choice items by number of reading and assessment courses taken. Results for the multiple-choice items were analyzed according to the number of reading courses and assessment courses taken by the PSTs. The overall means for both assessment knowledge ($M = .44$; $SD=.19$) and knowledge of RTI ($M = .45$; $SD=.25$) were consistent between the four groups of PSTs. Differences, however, were evident in the results for knowledge of reading instruction in the overall means for the number of courses taken in both reading and assessment as shown in Table 4. The overall means for the number of reading courses taken show a higher mean for PSTs who have taken more than 2 reading courses ($M = .56$; $SD=.15$), than for two courses or less ($M = .48$; $SD=.18$). This finding certainly makes sense - the more exposure and understanding PSTs have of the critical components for early reading development, the more this knowledge is internalized.

Table 4

Means and Standard Deviations for Knowledge Items and Number of Reading Courses Taken

Reading Courses Taken	Instruction			Assessment			RTI		
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
2 courses or less (n=84)	.48	.18	.89	.43	.18	.85	.44	.27	1.00
> 2 courses (n=66)	.56	.15	.74	.45	.20	.85	.45	.24	1.00

The overall means for the number of assessment courses, as shown in Table 5, reflected the opposite results. A higher mean was obtained for PSTs who had completed one course in assessment ($M = .54$; $SD=.17$), than for those who indicated they had completed more than one course ($M = .47$; $SD=.15$). This finding was not expected. As a possible explanation, two classes invited to participate in the study involved students enrolled in their first reading assessment course. Additionally, several other participating classes included students who had just completed their first reading assessment course the previous semester. The knowledge of assessment stored in long-term memory may have been more accessible for these students. Whether these differences were significant or not will be explored in the next section.

Table 5

Means and Standard Deviations for Knowledge Items and Number of Assessment Courses Taken

Assessment Courses Taken	Instruction			Assessment			RTI		
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
1 course (n=104)	.54	.17	.89	.45	.19	.92	.46	.27	1.00
> 1 course (n=46)	.47	.15	.68	.42	.16	.77	.42	.21	.86

Inferential Statistics

A factorial MANOVA (multivariate analysis of variance) was used to examine the effect of the number of courses taken in reading and assessment by PSTs on their (a) perceptions towards grade retention, (b) use of interventions to assist struggling readers, and (c) confidence in using assessments and interpretation of data. A second factorial MANOVA was used to determine the effect of the number of courses taken in reading and assessment by PSTs on their knowledge of (a) reading instruction, (b) assessment, and (c) RTI. Finally, associations between dependent variables were explored through correlation coefficients.

MANOVA results for number of courses taken and PSTs perceptions. A factorial multivariate analysis of variance (MANOVA) was used to examine the effect of the number of courses taken in the areas of reading (two courses or less; greater than two courses) and assessment (one course; greater than one) by PSTs on their perceptions related to retention, interventions to decrease retention, and confidence for engaging in

various assessment practices. Preliminary assumption checking revealed that retention and intervention scores for reading courses (greater than two) as well as confidence for assessment courses (one course), as assessed by Shapiro-Wilk test ($p > .05$), were not normally distributed. The one-way MANOVA was used, however, due to its robustness from deviations from normality. There were univariate outliers in the data, as assessed by inspection of a boxplot. Outliers were included in the analysis, as it is not believed the outliers will materially affect the result. There were no multivariate outliers, as assessed by Mahalanobis distance ($p > .001$); there were linear relationships, as assessed by scatterplot, no multicollinearity (Retention/Confidence $r = .107, p = .195$; Retention/Intervention $r = -.028, p = .734$; Intervention/Confidence $r = .085, p = .302$); and there was homogeneity of variance-covariance matrices, as assessed by Box's M test ($p = .420$). There was not a statistically significant interaction between the number of courses taken on the combined dependent variables (attitude measures), $F(3, 144) = .326, p = .806$; Wilks' $\Lambda = .993$; partial $\eta^2 = .007$

MANOVA results for number of courses taken and PSTs knowledge. A second factorial MANOVA was used to determine the effect of the number of courses taken in the areas of reading (two courses or less; greater than two courses) and assessment (one course; greater than one) by PSTs on their knowledge of reading instruction, assessment and RTI. Descriptive statistics for knowledge items by the number of courses taken in reading and assessment are reflected in Table 6. Preliminary assumption checking revealed that instruction and assessment knowledge scores were normally distributed for each level of reading and assessment courses taken, as assessed

by Shapiro-Wilk test ($p > .05$). Scores for RTI knowledge were not normally distributed ($p < .05$); however, due to the robustness of the factorial MANOVA to deviation from normality, the decision was made to use the test. There were univariate outliers present in the data for courses in both reading and assessment, as assessed by inspection of boxplots. The outliers were included in the analysis, as it is not believed the outliers will materially affect the result. There were no multivariate outliers in the data, as assessed by Mahalanobis distance ($p > .001$); there were linear relationships between instruction, assessment and RTI for courses taken in both reading and assessment, as assessed by scatterplot; no multicollinearity (Reading Instruction/Assessment $r = .565$, $p = .000$; Reading Instruction/RTI $r = .433$, $p = .000$; Assessment/RTI $r = .487$, $p = .000$) as assessed by Pearson correlation; and there was homogeneity of variance-covariance matrices, as assessed by Box's M test ($p = .502$).

Table 6

Unadjusted Means and Standard Deviations for Knowledge Items by Number of Courses Taken in Reading and Assessment

Number of Courses Taken		Instruction		Assessment		RTI	
Reading	Assessment	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
2 courses or less	1 course (n=63)	.50	.18	.44	.18	.47	.28
	> 1 course (n=21)	.41	.15	.41	.16	.37	.22
	Total (n=84)	.48	.18	.43	.18	.44	.27
> 2 courses	1 course (n=41)	.59	.16	.47	.21	.45	.27
	> 1 course (n= 25)	.52	.13	.43	.17	.46	.19
	Total (n=66)	.56	.15	.45	.20	.45	.24

There was no statistically significant interaction between the number of courses taken on the combined dependent variables, $F(3, 144) = .663, p = .576$; Wilks' $\Lambda = .986$; partial $\eta^2 = .014$. A statistically significant difference was evident between the number of reading courses taken on the combined dependent variables, $F(3, 144) = 4.989, p < .05$; Wilks' $\Lambda = .906$; partial $\eta^2 = .094$ (medium effect size), observed power = .908 (high). On the Tests of Between-Subjects Effects (Table 7), more than two reading courses taken was associated with a mean 'instruction' score .10 higher than two reading

courses or less taken, a statistically significant difference, $p < .05$ (Figure 2). A statistically significant difference was also apparent between the number of assessment courses taken on the combined dependent variables, $F(3, 144) = 2.790, p < .05$; Wilks' $\Lambda = .945$; partial $\eta^2 = .06$ (medium effect size), observed power = .663 (moderate). One assessment course taken was associated with a mean 'instruction' score .08 higher than greater than one assessment course taken, a statistically significant difference, $p < .05$ (Figure 3).

Table 7

Tests of Between-Subjects Effects for Number of Courses Taken and Knowledge of Reading Instruction

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.
Reading Courses	Reading Instruction Knowledge	.324	1	.324	12.485	.001
Assessment Courses	Reading Instruction Knowledge	.207	1	.207	7.974	.005
Error		3.793	146	.026		

Figure 2.

Mean Knowledge Score by Number of Reading Courses

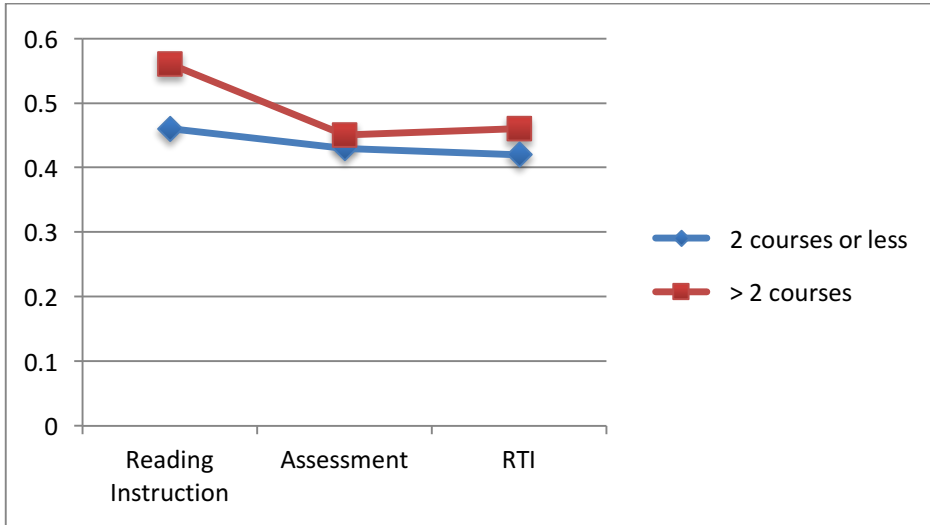
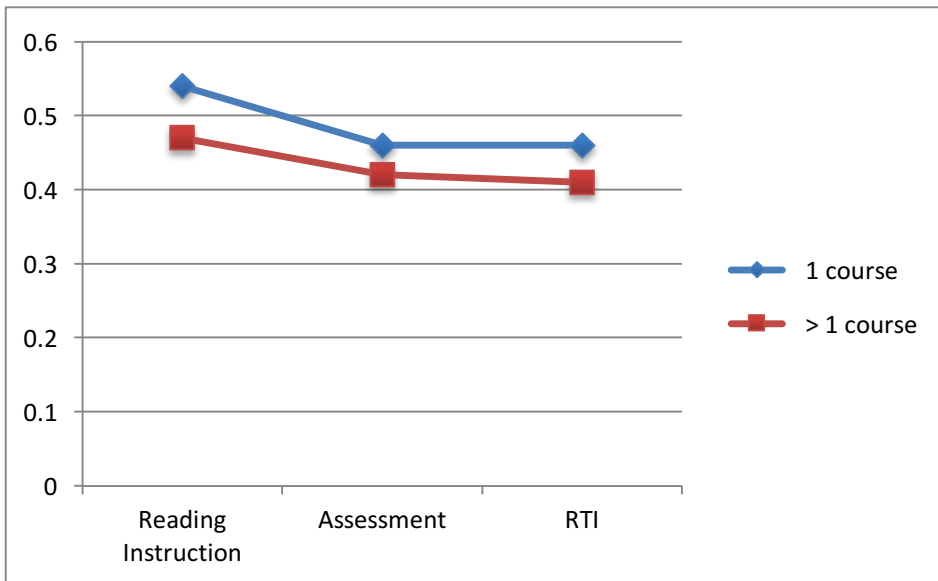


Figure 3.

Mean Knowledge Score by Number of Assessment Courses



Results from correlational analyses. Scores from the three surveys measuring PSTs’ perceptions and the three knowledge categories from the multiple-choice items were converted to *z scores* to make appropriate comparisons between the dependent variables. The results of the Pearson’s product-moment correlations are displayed in Table 8. There was a significant, moderate, positive correlation between PSTs’ knowledge of reading instruction and their knowledge of assessment, $r = .565$. Thus, an increase in PSTs’ knowledge of reading assessment was moderately correlated to an increase in their knowledge of reading instruction. Significant, moderate, positive correlations were also evident between PSTs’ knowledge of reading instruction and their knowledge of RTI, $r = .433$ and PSTs’ knowledge of RTI and their knowledge of assessment, $r = .487$.

Table 8

Correlations Between Survey Perception Items and Knowledge Items

	Knowledge			Perceptions		
	Reading Instruction	Assessment	RTI	Confidence	Grade Retention	Interventions
Reading Instruction	1.000					
Assessment	.565**	1.000				
RTI	.433**	.487**	1.000			
Confidence	.000	.194*	.243**	1.000		
Retention	.092	.071	.218**	.109	1.000	
Interventions	.102	.111	.187*	.097	.126	1.000

* $p < .05$

** $p < .01$

A significant, positive, but small correlation was found between PSTs' perceived confidence in using and interpreting common assessments used within an RTI model and their knowledge of assessment, $r = .194$, and their knowledge of RTI, $r = .243$. A significant, positive, small correlation was indicated between PSTs' perceptions related to grade retention and their knowledge of RTI, $r = .218$. A significant, positive, small correlation was also found between PSTs' knowledge of RTI and their perceptions regarding interventions to assist students at-risk of reading failure, $r = .187$.

This chapter reviewed results of data analyses related to PSTs' perceptions and knowledge for teaching reading and working with at risk readers within a RTI model. The next chapter, Chapter V, will provide a summary of these results as well as discuss policy implications and recommendations for future research.

CHAPTER V

SUMMARY AND CONCLUSIONS

Purpose

One purpose of the current study was to determine what PSTs understand about reading (pedagogical content knowledge) and assessment processes (both administration and interpretation) within the RTI framework to assist struggling readers. The other purpose was to explore whether there was a connection between the PSTs' knowledge of reading and assessment to inform instruction differentiation and their perceptions regarding retention. Findings for each research question will be discussed with implications provided.

Research Questions and Implications

Question one – perceptions regarding grade retention. The first part of question one was to examine what perceptions PSTs held related to the effectiveness of grade retention. The results showed that PSTs perceived grade retention to be appropriate in the following circumstances: to give immature children a chance to catch up, as a means of preventing students from facing daily failure in the next higher grade, and for students who have not responded adequately to intervention. PSTs perceived grade retention to be ineffective for students who make passing grades but do not meet grade level standards on early screening instruments. Also perceived as ineffective is to recommend grade retention in order to maintain grade level standards.

A positive finding from the results is that PSTs do not perceive retention as

appropriate for students who show daily progress in school, but do not meet the ‘cut-off’ for passing early screening instruments. A concern, however, is that the PSTs see grade retention as a plausible option for students in some circumstances. Since PSTs have not been in the teaching field it can be inferred that these are beliefs they bring with them into their university training programs, and most likely will also take these perceived beliefs about retention with them into their work as professional educators. The second part of the first research question was to determine if PSTs’ perceptions for the use of grade retention differed based on the number of reading and/or assessment courses taken. The results did not show a significant difference.

Implications. Unless university training programs discuss the research surrounding grade retention, PSTs will continue to take their preconceived beliefs about the use of the practice into the classroom with them. This will likely impact the lives of many students in the future.

Question two – perceptions regarding intervention effectiveness. The first part of question two was to gain insight regarding interventions that PSTs perceived as being most effective to assist students at risk of reading failure. PSTs perceived providing students additional reading instruction as most effective. Interventions perceived as least effective were grade retention and placement in special education. The use of formative evaluation for helping at risk students was perceived as having a moderate effect.

Positive findings from these results are that PSTs perceive the importance of providing additional reading instruction for students who are at risk for reading failure

and conversely do not perceive grade retention as an effective intervention for these same students. An area of concern is the lack of understanding of the importance of formative assessment based on PSTs' perceptions that formative evaluation would have only moderate effects for assisting at risk readers. When additional reading instruction is provided the use of formative evaluation should be an integral part of the process (Brookhart, 2011; Supovitz, 2012). Evaluation is needed first, to determine the focus of the targeted instruction, and second, to ensure the student makes progress from the instruction delivered. The second part of question two was to determine if there was a difference in PSTs' perceptions for the effectiveness of interventions provided to at risk readers based on the number of reading and/or assessment courses taken. The results did not show a significant difference.

Implications. In order to assist students at risk for reading failure, teachers must be knowledgeable about both reading *and* assessment. Teachers need to be able to integrate their knowledge of reading and assessment to make appropriate instructional decisions for students (Herman, Osmundson, Yunyun, Ringstaff, & Timms, 2015). Teacher training programs need to incorporate this instruction for future teachers within their coursework. Additionally, districts should not assume that teachers enter the classroom with the ability to integrate their knowledge of both content and assessment to appropriately meet the needs of students who struggle. With this in mind, if districts expect teachers to use assessment data for instructional purposes, professional development should be provided (Datnow & Hubbard, 2015).

Question three – perceived confidence for the use of assessment. The first part of question three was to gain insight into the perceived confidence of PSTs for engaging in various assessment related activities commonly used within an RTI model. PSTs rated themselves as somewhat confident to very confident in all areas. Students indicated the highest perceived confidence in their ability to use progress monitoring. The lowest perceived confidence designated by PSTs was in their ability to interpret and use the results of early screening assessments.

Overall, PSTs perceived their abilities to engage in the various assessment activities used in a RTI model as stronger than their actual knowledge conveys when responding to multiple-choice items. On a question (Q39) that required interpreting results of an early screening assessment to plan instruction, less than half (46%) of the respondents answered correctly. An item (Q42) used to assess understanding regarding the use of diagnostic assessment was answered correctly by 53% of the PSTs. When asked about the characteristics needed for progress monitoring instruments (Q36), only 19% of PSTs correctly indicated they should be relatively quick to administer and have multiple equivalent forms. On a question (Q46) that involved interpreting a student's progress monitoring graph, less than half (41%) of the PSTs responded correctly. The second part of question two was to determine if a difference was evident in PSTs' perceived confidence based on the number of reading and/or assessment courses taken. The results did not support a significant difference.

Implications. Perhaps the PSTs' perceived confidence for using and interpreting assessments was due to having recently taken a course in their university program on

reading assessment. However, if the findings are taken at face value, this could be a reason both district and building administrators believe teachers have the knowledge needed to properly give and interpret assessment results for instruction. The teachers themselves believe they encompass this knowledge.

Question four – knowledge of reading instruction. The first part of question four sought to examine PSTs’ pedagogical content knowledge of early reading to assist in the use of assessment data for planning instruction for students considered at risk for reading difficulties. According to the demographic data, over half of the PSTs (56%) involved in the study had taken at least two reading courses. In the area of phonological/phonemic awareness respondents were able to identify a word containing five phonemes and five graphemes (76%) and to use their knowledge of phonemic awareness to analyze a student’s spelling errors (80%). However, for a student whose spelling errors indicated weak phonemic awareness skills, only 35% of the respondents were able to correctly identify an appropriate intervention for instruction. Just over half of the PSTs correctly identified why phonemic awareness is an important skill in learning to read (54%), but less than half were able to identify characteristics that signaled weak phonemic awareness (45%).

On items related to knowledge of phonics, PSTs correctly identified activities to improve letter recognition (73%) and for decoding multisyllabic words (71%). However, when asked to select a group of words that would be appropriate for teaching the vowel-consonant-e syllable pattern, only 25% of the PSTs responded correctly. Additionally, only 23% were able to correctly identify an irregular word for reading.

The findings indicate inconsistencies in PSTs' knowledge of both reading development and the teaching of early reading skills. This knowledge is critical for understanding student errors in order to tailor instruction that meets the student's needs.

The second part of question four explored if there was a difference in PSTs' knowledge based on the number of reading and assessment courses taken. PSTs' knowledge of reading instruction (mean score) was found to be significantly higher for those who reported taking more than two reading courses than for those who reported taking two courses or less. The opposite finding was evident for assessment courses taken. PSTs' knowledge of reading instruction (mean score) was found to be significantly higher for those who reported taking only *one assessment course* than for those who reported taking more than one course in assessment.

Implications. The finding that PSTs who reported taking more reading courses demonstrated stronger knowledge in reading instruction would suggest the importance of these courses. An unexpected and interesting finding was the stronger knowledge of reading for those PSTs who reported taking only one assessment course. A suggested explanation for this finding is that the PSTs involved in the study were either enrolled in their first reading assessment course or had taken the course the previous semester. However, this would also make an argument for the importance of the knowledge gained from the reading assessment course for assisting PSTs understanding of not only assessment but also *reading instruction*. Interestingly, Herman et al. (2015) stated, "...we postulate that there may be a reciprocal relationship between teachers' use of assessment and their content-pedagogical knowledge" (p. 345).

Relationship Between Perceptions and Knowledge

A purpose of the current study was to determine whether there is a relation between PSTs' knowledge of reading and assessment to inform instruction differentiation and their perceptions regarding retention. Four significant, but small correlations were found. PSTs' perceived confidence in using and interpreting common assessments showed a positive relationship between both their knowledge of assessment ($r = .194$) and their knowledge of RTI ($r = .243$). A positive relationship was also found between PSTs' perceptions regarding the use of grade retention and their knowledge of RTI ($r = .218$). Finally, a positive relationship was found between PSTs' knowledge of RTI and their perceptions for the effectiveness of interventions to assist students at risk for reading failure ($r = .187$).

Implications. Although small, these correlations show that knowledge of assessment and particularly RTI does positively impact the perceptions of PSTs related to the use of grade retention, use of appropriate interventions to assist at risk readers, and their confidence for using and interpreting assessments within an RTI model.

Conclusion

Since there is ample research that documents the importance of teaching early reading skills (McCardle & Chhabra, 2004; NICHD, 2000), it is critical to ensure students in the early primary grades or who are struggling, have teachers with a thorough knowledge of how reading develops and how to teach these early reading skills. States and districts across the United States continue to wrestle with the issue of how to ensure literacy for children by the end of third grade (Rose & Schimke, 2012). In many

instances, screening instruments are required to find students at risk of reading failure early. If teachers are not able to interpret the results of these assessments and subsequently use what they know about reading to plan instruction for students, the administration of the assessments become a meaningless activity and the time involved wasted. Teachers certainly want their students to learn and succeed, therefore, it is imperative that teachers are provided the necessary knowledge and skills in order to meet the needs of the students entrusted to them.

Limitations and Future Research

Several limitations exist in the present study that may impact the generalizability of results. The sample, which was one of convenience, was from a university in the southwest region of the United States, whose elementary teacher preparation program for EC-6 Generalists has been rated within the top five nationally (NCTQ, 2014), and so may not be representative of PSTs at other universities in the United States. Although the percentage of special education PSTs included in the study was low (9%), the course work for these students is not identical to the course work for the PSTs working towards EC-6 Generalist certification. Recommendations for future work in this area would be to expand the research to other universities across the United States. It would also be beneficial to include in-service teachers currently working with students in the early elementary grades as well as special education teachers in order to gain a broader perspective.

The students who chose to participate may have done so in order to earn the extra credit or obtain the e-gift certificate provided. This incentive may have invited bias

since the students who participated in the survey may be fundamentally different than the students who chose not to participate (Patten, 2009).

The reliability for one of the attitude surveys – perceptions for interventions – was weaker than typically recommended (Patten, 2009). The survey was lengthy, which may have caused some respondents to become impatient and therefore shallower in their responses in order to finish. The length of the survey may have also impacted the response rate, which was lower than what is considered adequate (Babbie, 1990). Additionally, the PSTs may have overrepresented perceptions of their confidence for using and interpreting various assessment activities involved in the RTI process due to social desirability.

To this point only theories postulated the reciprocal relationship between teachers' pedagogical content knowledge of reading and their ability to use and interpret results of formative assessments in reading to adjust instruction. This study found a significant, moderate, positive correlation between PSTs' knowledge of reading instruction and their knowledge of assessment ($r = .565$). It would certainly be beneficial to have additional research data to validate the occurrence of this interactive relationship.

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APPENDIX A

Survey of Pre-service Teachers' Perceptions and Knowledge to Inform Reading Instruction

Howdy!

Thank you for participating in this survey. The information you provide will be invaluable in our efforts to ascertain what preservice teachers are learning about reading and assessment for instructional purposes. **The survey results are anonymous.** If you complete the survey you will awarded extra credit points in your class. There will be a place for you to enter your class information and UIN number upon completion.

Some of the items will be more difficult than others; however, please answer to the best of your ability (it is not expected that you will be able to answer every item correctly).

This research (completing this survey) is **voluntary** and you have the choice whether or not to be in this research study. You may decide to not begin or to stop participating at any time. **If you choose not to be in this study or stop being in the study, there will be absolutely no effect on your grade. Additionally, your instructor will provide you with an optional assignment to earn the same amount of extra credit points.**

Part I: Demographics

1. What is your gender?

Male

Female

2. What is your area of intended certification?

Bachelor's degree, Elementary Education (EC-6 Generalist)

Bachelor's degree, Middle Grades 4-8 (ELA/Social Studies)

Bachelor's degree, special education

Other

3. How many reading courses have you taken? _____

4. How many courses in reading assessment have you taken? _____

Part II: Grade Retention

5. Please indicate the choice that best reflects how you feel about each of the following statements:

Item	Response			
	AGREE	TEND TO AGREE	TEND TO DISAGREE	DISAGREE
a. Retention (having students repeat a grade) is an effective means of providing support in school for a child who does not get support at home.	1	2	3	4
b. Students who make passing grades but do not meet grade level standards on early screening instruments (e.g., TPRI, DRA, etc.) should be retained.	1	2	3	4
c. Retention in grades K-3 is an effective means of giving an immature child a chance to catch up.	1	2	3	4
d. Retention is an effective means of preventing students from facing daily failure in the next higher grade.	1	2	3	4
e. Retention is necessary for maintaining grade level standards.	1	2	3	4
f. Students who have not responded adequately to intervention should be retained.	1	2	3	4

Note. Items a (adapted), b (adapted), c, d, and e, are from “Unraveling Teachers’ Beliefs about Grade Retention” by E M. Tomchin and J. C. Impara, 1992, *American Educational Research Journal*, 29. Copyright 1992 by Sage Publications. Used with permission.

6. What interventions do you consider most effective for helping students at risk of reading failure?

Intervention	Response			
	No Effect	Slight Effect	Moderate Effect	Great Effect
a. Smaller class sizes	1	2	3	4
b. Additional reading instruction	1	2	3	4
c. Tutoring – offered before or after school	1	2	3	4
d. Grade retention	1	2	3	4
e. Special education placement	1	2	3	4
f. Summer school	1	2	3	4
g. Cooperative learning	1	2	3	4
h. Formative evaluation (i.e., screening; informal assessments; progress monitoring)	1	2	3	4

Note. Items f, g, and h are from “Preservice Teacher Beliefs About Retention: How Do They Know What They Don’t Know?” by B. G. Range, D. D. Yonke, and S. Young, 2011, *Journal of Research in Education*, 21(2). Copyright 2011 by the Eastern Educational Research Association. Used with permission.

7. Identify how confident you are in your ability to engage in the following activities:

Activities	Confidence			
	I would benefit from assistance in this area	Somewhat confident	Not very confident	Very Confident
Screening assessment	1	2	3	4
Interpreting results of screening assessment for instruction	1	2	3	4
Informal diagnostic assessment	1	2	3	4
Interpreting results of informal diagnostic assessment for instruction	1	2	3	4

Activities	Confidence			
	I would benefit from assistance in this area	Somewhat confident	Not very confident	Very Confident
Progress monitoring	1	2	3	4
Interpreting results of progress monitoring assessment for instruction	1	2	3	4
Changing instruction if student progress is NOT evident from assessment	1	2	3	4
Grouping students for reading intervention	1	2	3	4

Part III: Knowledge about Reading and Reading Practices

8. Ms. Aguirre has several English language learners (ELLs) in her class. To provide her ELL students with additional support, Ms. Aguirre often incorporates body movement into her verbal interaction with her students by clapping the syllables of words in simple sentences. Her approach focuses primarily on which of the following skills?

- a. phonological awareness
- b. pragmatics
- c. phonics
- d. syntax
- e. I don't know

9. To best assess a student's accuracy and rate of reading, a teacher should have the student

- a. read a passage silently for one minute and then write a summary of it.
- b. read out loud for one minute from a list of words of varying difficulty while the teacher records miscues.
- c. read a passage with words omitted out loud for one minute and then fill in the blanks with appropriate words
- d. read a passage out loud for one minute while the teacher records miscues.
- e. I don't know

10. Which of the following words has five phonemes and five graphemes?

- a. apple
- b. stand
- c. break
- d. crash
- e. I don't know

11. Which of the following would best help a teacher evaluate the phonics skills of beginning readers?

- a. examining students' handwriting
- b. assessing students' sight word recall
- c. timing students as they read orally
- d. analyzing students' attempted spellings
- e. I don't know

12. Andre, a fifth grade student, is struggling to decode unfamiliar multisyllabic words. The difficulty is affecting his fluency and comprehension. Which of the following is the most effective instructional strategy to improve Andre's reading skills?

- a. using cards containing common morphemes to build and segment words
- b. engaging in repeated readings of independent-reading-level passages
- c. participating in peer tutoring to develop sight word recognition
- d. practicing and presenting an oral reading performance to a class
- e. I don't know

13. A teacher observes that a student has difficulty reading 10 out of 100 words in a text. Which of the following is the most appropriate determination for the teacher to make?

- a. the text is at the student's instructional reading level because it exposes the student to new vocabulary.
- b. the text is at the student's instructional reading level because it maximized development of the student's fluency.
- c. the text is at the student's frustration reading level because it does not sufficiently challenge the student's vocabulary development.
- d. the text is at the student's frustration reading level because it is too difficult for the student to comprehend.
- e. I don't know

14. Which of the following beginning kindergarteners is at greatest risk of developing reading difficulties?

- a. a kindergartner who has history of language delay
- b. a kindergartner who has poor fine motor control (e.g., difficulty cutting, pasting, and writing with a pencil)
- c. a kindergartner who frequently confuses the letters *b* and *d* despite knowing most other letters
- d. a kindergartner who cannot decode simple nonsense words
- e. I don't know

15. Phonemic awareness is important in learning to read mainly because:

- a. good phonemic awareness helps children to identify individual speech sounds that can then be mapped to letters
- b. good phonemic awareness improves children's oral language comprehension, which improves reading comprehension
- c. good phonemic awareness helps children to learn different letter patterns that have the same sound, such as *ai* and *ay*
- d. good phonemic awareness enables children to read common sight words and exception (irregular) words such as *have* and *some*
- e. I don't know

16. A struggling second-grade reader has learned to decode closed syllable (short vowel) words with all vowels, as well as with consonant blends and consonant digraphs. Which of the following words would the student NOT be capable of decoding?

- a. chip
- b. lamp
- c. turn
- d. cast
- e. I don't know

17. Which of the following is a central characteristic of all response-to-intervention (RTI) models?

- a. routine screening and progress monitoring of all students in a school
- b. routine screening of all students and progress monitoring of at-risk students
- c. full inclusion for virtually all special education students
- d. allowing general education teachers the flexibility to design Tier 1 curricula
- e. I don't know

18. In a three-tiered response-to-intervention (RTI) model, Tier 2 involves:

- a. core general education practices for all students
- b. one-to-one, research-based interventions for struggling students
- c. supplemental, research-based interventions for struggling students
- d. special education services for students with disabilities
- e. I don't know

19. Emily, a second grader, has been receiving an initial intervention in reading, for a half-hour three times per week, for the past eight weeks. (She has not previously received any reading interventions). A graph of her performance on assessments shows limited growth during the eight-week period, with Emily still well below benchmark in reading and not on a trajectory to catch up. In a typical three-tiered RTI model, Emily would:

- a. be referred for comprehensive evaluation for special education
- b. be classified as having learning disabilities
- c. receive pullout remedial reading services
- d. receive a more intensified or individual intervention
- e. I don't know

20. Which of the following first-grade students is most clearly demonstrating difficulty with phonemic awareness?

- a. a child who does not know sounds for letter patterns like *sh* but who can easily blend sound for single consonants to decode words like *strap*, *flip*, and *left*
- b. a child who can sound out letters in printed words accurately but cannot blend them; for example, for the word *left*, s/he can sound out the letters *l-e-f-t* but cannot produce the entire word
- c. a child who can sound out and blend phonetically regular words such as *strap* and *left*, but cannot read common irregular words such as *have*
- d. a child who can decode many one-syllable printed words accurately, but who decodes very slowly
- e. I don't know

21. In interpreting scores from standardized, norm-referenced tests, most authorities recommend the use of:

- a. grade equivalent or age equivalent scores
- b. standard scores or percentile ranks
- c. raw scores
- d. percentages

e. I don't know

22. A first grade teacher can best help children to develop rapid, automatic word recognition by first teaching them:

- a. how to use grapho-phonemic, semantic, and syntactic cues to read unfamiliar words in context
- b. how to use common phonics generalizations to read unfamiliar words
- c. sets of common sight words using flash cards
- d. how to divide long words into syllables orally
- e. I don't know

23. A third-grade teacher gave a spelling test that included the following words: write, scratch, great, and fraction. He examined the spelling errors of several struggling readers in the class. Based on these spelling errors, which struggling reader appears to have the lowest level of phonemic awareness?

- a. the student who produced *right, scrach, grate, and fracktion*
- b. the student who produced *rid, scrach, gate, and fakshn*
- c. the student who produced *writ, skratch, grate, and fracshun*
- d. the student who produced *rite, scrach, graet, and fractoin*
- e. I don't know

24. A third grade teacher wants to improve his students' ability to decode multisyllable words. Which of the following activities would be best for this purpose?

- a. encourage students to sound out multisyllable words letter by letter
- b. encourage students to read independently in books that contain numerous multisyllable words
- c. teach students common word parts, such as common prefixes and suffixes, and to look for those parts in long words
- d. teach students common multisyllable words through repeated practice using flash cards
- e. I don't know

25. Which of the following activities would be best for promoting reading fluency in typical second graders?

- a. having children sort words into piles based on their spelling patterns and then practice decoding the words

- b. having children predict what is likely to happen next when the teacher reads a predictable book aloud to them
- c. providing regular opportunities for children to read independently in books that are at an appropriate level of difficulty for them
- d. teaching children the meanings of unusual vocabulary
- e. I don't know

26. Which of the following is the greatest advantage of RTI models in reading?

- a. they are much less expensive than other educational models.
- b. they encourage teachers to design their own assessments and curricula.
- c. they make early intervention with struggling readers much more likely.
- d. they promote full inclusion of students with disabilities.
- e. I don't know

27. An elementary school is implementing an RTI model in reading, and the teachers are not happy. The screening assessment, administered to all children in each grade beginning in the middle of first grade, takes about 30-40 minutes per child to administer. In addition to consuming considerable instructional time, the teachers say that the screening measure fails to identify a significant number of struggling readers. The school also is using a core (basal) reading program based on the five areas outlined in the National Reading Panel report that some teachers find too prescriptive. So far, the model has not been successful in reducing retention rates or referrals to special education. What is the main problem in this school's implementation of RTI?

- a. the school should not be requiring teachers to use a core (basal) reading program
- b. the school is not using an appropriate screening assessment
- c. the school is beginning screening too early
- d. the screening assessment should only be given to a subset of children, not to all children
- e. I don't know

28. Molly is a first grader who struggles in reading and obviously has difficulties with decoding. Which of the following types of assessment would be most useful for Molly's teacher in planning decoding instruction with Molly?

- a. a criterion-referenced assessment of Molly's decoding skills that yields information about her ability to decode different word patterns
- b. a norm-referenced assessment of Molly's decoding skills that yields information about her performance compared to other first graders

- c. a running record that yields information about Molly's ability to use syntactic and semantic cues in conjunction with grapho-phonemic cues
- d. a comprehensive assessment that yields information about the extent to which Molly's decoding problems impact her comprehension
- e. I don't know

29. Which of the following students is most in need of intervention?

- a. a beginning kindergarten student who has limited knowledge of print concepts
- b. a beginning kindergarten student who cannot blend phonemes in words like *stamp* and *blast*
- c. a beginning second grader who can recognize many one-syllable words by sight, but who cannot decode most unfamiliar words
- d. a beginning second grader who can decode most one-syllable and some two-syllable words accurately, but who is not a highly fluent reader
- e. I don't know

30. A kindergarten teacher wants to improve his students' abilities to recognize letters and give their sounds. Which of the following activities would be best for that purpose?

- a. provide extensive labeling of environmental print in the classroom, using large index cards with clear print
- b. have children practice reciting the alphabet song repeatedly while looking at the alphabet posted in the class
- c. have the children trace written models of individual letters and say the letter sound while they are tracing it
- d. when reading "big books" aloud to the children, emphasize the initial sound of some words
- e. I don't know

31. After seeing the results of a second-grade student's Developmental Reading Assessment (DRA) administered by a paraprofessional, the teacher noted the student's reading fluency was below the level typically expected for the student's grade placement. Which of the following represents the best starting point for beginning intervention for the student?

- a. since fluency is the weak area, continue to have the student read second grade material to increase her reading speed
- b. administer a phonics screener to investigate the student's word reading/decoding skills
- c. additional time in core instruction should be sufficient

- d. have the student use a computer program designed specifically to increase reading fluency
- e. I don't know

32. A standardized Informal Reading Inventory (IRI) is most useful for:

- a. determining whether a student uses graph-phonemic, syntactic, and semantic cues when reading
- b. estimating a student's independent, instructional, and frustration levels in reading
- c. providing detailed, accurate information about a student's skills for comprehending a wide range of grade-appropriate text
- d. establishing how background knowledge influences a student's reading comprehension
- e. I don't know

33. Smith Elementary School serves a population primarily of low-income, urban students. Routinely, only 30-40% of students meet the goal for reading on the state-mandated assessment. Special education at Smith Elementary School receives a high volume of referrals for learning disabilities evaluations. In implementing an RTI model, what should educators at Smith Elementary School emphasize first?

- a. improve Tier 1 reading instruction so that at least 80% of students are meeting important benchmarks in reading, such as the goal on the state assessment
- b. improve Tier 1 reading instruction so that at least 90% of students can be included in the general education setting
- c. improve diagnostic evaluations to better detect students with learning disabilities in reading
- d. improve the referral process for students with disabilities
- e. I don't know

34. Within an RTI model, students with learning disabilities in reading are conceptualized as those who:

- a. have a significant discrepancy between their intellectual capacity, as measured by IQ tests, and their reading achievement
- b. cannot function in the general education setting
- c. need one-to-one instruction in order to learn to read
- d. respond insufficiently to research-based interventions that are effective for most struggling readers
- e. I don't know

35. An elementary school that uses an RTI model has established a 20th percentile cutoff (i.e., cut-point) on Tier 1 benchmark assessments in reading as its definition of at-risk status. This 20th percentile cutoff means that:

- a. any student achieving below the 20th percentile must be provided with intervention
- b. any student achieving below the 20th percentile must be reviewed and considered for intervention, depending on other data about the student's achievement
- c. any student achieving below the 20th percentile must be reviewed and considered for special education services, depending on other data about the student's achievement
- d. a student must achieve below the 20th percentile on the benchmark assessment in order to be eligible for special education services
- e. I don't know

36. Assessments used for progress monitoring in reading should have which of the following characteristics?

- a. they should provide diagnostic information about a student's decoding skills, reading fluency, and reading comprehension
- b. they should yield accurate estimates of a student's current grade level of functioning
- c. they should be relatively quick to administer and have multiple equivalent forms
- d. they should provide many different types of norm-referenced scores
- e. I don't know

37. A kindergarten teacher wants to introduce two new letters and their sounds to her students. It is the beginning of the year, and most students know very few letters. Of the following, which pair of letters would be best to introduce together?

- a. *b* and *d*
- b. *m* and *n*
- c. *a* and *o*
- d. *m* and *s*
- e. I don't know

38. During the morning message, a kindergarten teacher produces the /t/ sound and asks the students, "Who can show me the letter in the morning message that makes that sound?" A student then uses a pointer to identify the letter that corresponds with that sound. Which of the following concepts is the teacher primarily addressing?

- a. phonemic awareness
- b. alphabetic principle
- c. fluency
- d. schema

e. I don't know

39. On the Beginning-of-Year (BOY) administration of the Texas Primary Reading Inventory (TPRI), a first-grade student scored as Still Developing on the Inventory section in the area of Phonemic Awareness. The student's scores indicate developed for Blending Word Parts and Blending Phonemes, but Still Developing on Deleting Initial Sounds and Deleting Final Sounds. Which of the following represents the best starting point for beginning intervention for the student?

- a. rhyming activities
- b. additional time in core instruction should be sufficient
- c. segmentation of phonemes in words
- d. strengthen the student's letter/sound correspondences
- e. I don't know

40. A third-grade student made the following errors on an informal developmental spelling test: *hop* for *hope*; *wat* for *wait*; *stic* for *stick*; *shin* for *shine*; *blad* for *blade*; *coch* for *coach*; and *frit* for *fright*. Which of the following represents the best starting point for beginning intervention for the student?

- a. student segments three- and four-phoneme words
- b. student uses a mirror to see, feel, and hear similar sounds
- c. student traces and copies the correct spelling for the words missed five times each
- d. student learns a specific pattern or rule
- e. I don't know

41. A first-grade student made the following errors on their spelling test: *jream* for *dream* and *chran* for *train*. Which of the following represents the best starting point for beginning intervention for the student?

- a. student segments three- and four-phoneme words
- b. student uses a mirror to see, feel, and hear similar sounds
- c. student traces and copies the correct spelling for the words missed five times each
- d. student learns a specific pattern or rule
- e. I don't know

42. Which type of assessment is used to gain information on specific skills in order to plan intervention for a student?

- a. screening
- b. diagnostic assessment
- c. progress monitoring
- d. outcome assessment
- e. I don't know

43. On a standardized measure used to assess word reading fluency, the student is to read a list of words as quickly as possible within 45 seconds. Many of the students tested appear to be able to read only a few words within this time limit. What would be the most appropriate decision in this situation?

- a. continue administering the test using the designated time allotment
- b. to get a better indication of the students' abilities, increase the time to one minute
- c. allow the students a few seconds to look at the words prior to timing them
- d. since the first five words are so easy, have the students start at the sixth word to begin timing them
- e. I don't know

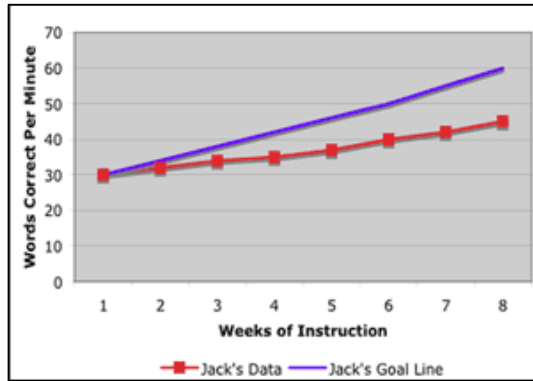
44. Which of the following is an exception word (phonetically irregular) word that would be difficult for children to decode by applying phonics skills?

- a. *night*
- b. *sick*
- c. *was*
- d. *went*
- e. I don't know

45. Which of the following sets of words would be best to use when providing students with examples of words conforming to silent e (magic e) phonics generalization?

- a. *time, make, cube, done*
- b. *brake, use, hope, shine*
- c. *lake, breathe, raise, fate*
- d. *tree, lie, blue, toe*
- e. I don't know

46. The graph below shows Jack’s progress in word reading fluency during a Tier 2 reading intervention. Based on his progress what would be the best recommendation?



(Graph is copyright the IRIS Center; used with permission)

- a. Jack is making progress so he should be removed from Tier 2 intervention
- b. Jack is making progress but still requires more time on the provided Tier 2 intervention
- c. Jack is making progress but requires a change in his instructional services along with continued Tier 2 intervention
- d. Jack is still below level and so should be referred to special education
- e. I don't know

Note.

Questions 8, 9, and 38 are from *TEXES Preparation Manual: 191 Generalist EC-6*, by the Texas Education Agency, 2011. Austin, TX: Author. Copyright 2011 by the Texas Education Agency. Used with permission.

Questions 10, 11, 12, and 13 are from *TEXES Preparation Manual: 117 English Language Arts and Reading 4-8*, by the Texas Education Agency, 2012. Austin, TX: Author. Copyright 2012 by the Texas Education Agency. Used with permission.

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APPENDIX B

Table 9

Means and Standard Deviations for Multiple-Choice Items Relating to Knowledge of Reading Instruction, Assessment, and RTI

Item	Topic	Type	<i>M</i>	<i>SD</i>
Q8	Phonological awareness	RI – PCK	.58	.495
Q9	Fluency assessment	A	.83	.374
Q10	Number of phonemes and graphemes	RI - CK	.77	.425
Q11	Assessment of phonics skills in beginning readers	A	.48	.501
Q12	Decoding multisyllable words	RI - PCK	.69	.465
Q13	Determining text difficulty	A	.29	.457
Q14	Knowledge of reading development	RI - PCK	.33	.473
Q15	Importance of phonemic awareness in learning to read	RI - CK	.54	.500
Q16	Knowledge of syllable types	RI - PCK	.41	.493
Q17	Central characteristic of RTI models	RTI	.47	.501
Q18	Characteristics of Tier 2	RTI	.57	.497
Q19	Lack of response to Tier 1 intervention	RTI	.48	.501
Q20	Phonemic awareness	RI - PCK	.46	.500
Q21	Knowledge of test scores (norm-referenced)	A	.51	.502
Q22	Phonics	RI - PCK	.15	.356
Q23	Phonemic awareness	RI - PCK	.80	.401
Q24	Decoding multisyllable words	RI - PCK	.71	.454
Q25	Fluency	RI - PCK	.75	.433
Q26	Greatest advantage of RTI	RTI	.58	.495
Q27	Implementation of RTI	RTI	.42	.496
Q28	Assessing phonics for planning instruction	A	.39	.490
Q29	Knowledge of reading development	RI - PCK	.59	.494

Table 9 Continued

Item	Topic	Type	<i>M</i>	<i>SD</i>
Q30	Letter recognition	RI - PCK	.73	.444
Q31	Understanding early screening assessments	A	.52	.501
Q32	Purpose of informal reading inventories	A	.60	.491
Q33	Understanding the importance of Tier 1 instruction	RTI	.31	.464
Q34	Concept of LD within RTI	RTI	.31	.464
Q35	Understanding cut-off scores	A	.46	.500
Q36	Knowledge of instruments for progress monitoring	A	.19	.396
Q37	Sequence of sounds for teaching	RI - PCK	.53	.501
Q38	Alphabetic principle	RI - PCK	.39	.489
Q39	Interpreting screening assessment for instruction	A	.46	.500
Q40	Error analysis in spelling	RI - PCK	.58	.495
Q41	Error analysis in spelling	RI - PCK	.36	.480
Q42	Knowledge of diagnostic assessment instruments	A	.53	.501
Q43	Assessment and standardization	A	.08	.273
Q44	Irregular word	RI - CK	.23	.424
Q45	Vowel-consonant-e syllable	RI - CK	.26	.437
Q46	Interpreting progress monitoring for instruction	A	.41	.493

Notes: RI – Reading Instruction; CK – Content knowledge; PCK – Pedagogical content knowledge; A – Assessment; RTI – Response to Intervention