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Preservice Teachers' Perceptions of Their Knowledge and Application of Response to Intervention

Carrie Dannelle Jepma

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PRESERVICE TEACHERS' PERCEPTIONS OF THEIR KNOWLEDGE AND
APPLICATION OF RESPONSE TO INTERVENTION

by

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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

In partial fulfillment of the requirements

For the degree of

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2012


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This dissertation, submitted by Carrie Dannelle Jepma in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done, and is hereby approved.



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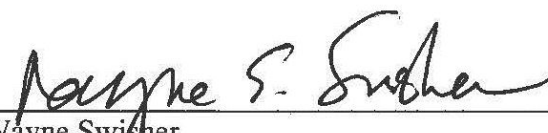


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This dissertation is being submitted by the appointed advisory committee as having met all of the requirements of the Graduate School at the University of North Dakota and is hereby approved.



Wayne Swisher
Dean of the Graduate School



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Degree Doctor of Philosophy

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Carrie Dannelle Jepma
December 2012

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ABSTRACT

Response to Intervention (RTI) is a model for providing instructional and scientific-based interventions to *all* children who struggle. RTI uses data-based decision making for the interventions, instructional evaluation, intervention intensity and length of time, and evaluation and recommendations for any adjustments needed in instruction in both the problem-solving and standard protocol models. The difference between the two models of RTI is that the interventions are individualized for each student in the problem-solving model, but not the standard protocol model.

RTI has been used by schools and agencies with research to support that it meets the needs of children and is successful when treatment integrity is evaluated. While many studies have been completed on the positive learning results of children served in RTI, few studies have been conducted on inservice teachers' perceptions regarding knowledge and implementation of RTI, and fewer yet have been done on preservice teachers' perceptions of knowledge and implementation of RTI. With some researchers concerned about treatment integrity in RTI, this is an area where further research was needed.

The purpose of this current study was to explore preservice teachers' perceptions of their knowledge and implementation of RTI. Specifically, would the number of field placements or the number of specific courses such as special education courses, assessment courses, or the number of methods courses impact preservice teachers'

perceptions of their knowledge and implementation of RTI? A Likert-type survey was developed that included 15 questions regarding knowledge of RTI, scaffolding, differentiating instruction, and formative assessment; this survey also included four open-ended questions. Thirty two elementary and secondary preservice teachers from one upper plains university, not included in the current study, participated in the pilot. In this current study, 104 elementary and secondary preservice teachers from three upper plains universities were enrolled.

The construct of knowledge by the number of practica and the number of student teaching placements (field placements) were both found to be significant. Also significant were the constructs of scaffolding and formative assessment by the number of assessment courses. No significance was found in the construct of differentiating instruction by either the number of field placements or number of courses taken.

These findings suggest that the number of field placements can affect preservice teachers' perceptions of knowledge of RTI, and the number of assessment classes can affect preservice teachers' perceptions of implementing RTI in the areas of scaffolding and formative assessment.

CHAPTER I

INTRODUCTION

According to The Nation's Report Card on Reading (National Center for Education Statistics, 2009), racial and ethnic gaps still exist in reading achievement of fourth and eighth graders (p. 10). Because of this gap, concerned educators have been conducting research into the causes and possible solutions to close the achievement gap (Boykin & Noguera, 2011; Gay, 2010; Noguera, 2003). In addition to these educators, specialists in reading instruction and special education have also been concerned with struggling readers and the best way to help them achieve (Burns & Gibbons, 2008; Fuchs & Fuchs, 2009; Vaughn & Fuchs, 2003). States and districts across the U.S. are beginning to look to Response to Intervention (RTI) as a way to help close the achievement gap and help *all* struggling learners. The National Center for RTI defines it as . . .

assessment and intervention within a multi-level prevention system to maximize student achievement and reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities (National Center on Response to Intervention, n.d., glossary of RTI terms: Response to Intervention (RTI) section of website).

RTI holds promise because of its “ approach to school improvement that begins with high-quality foundation instruction/support and uses data-based decision making to add graduated levels of assistance, where needed, to ensure academic and/or behavioral success for students (Sugai, Horner, Fixsen, & Blase, 2010, p. 286). While RTI is used to support struggling readers, it is also a process used to support students struggling in math and written expression (Burns & Gibbons, 2008, p. 17).

Background of RTI

Response to Intervention has recently received more attention by teachers and schools, since the reauthorization of the Individuals with Disabilities Education Act (IDEA 2004) no longer requires the use of IQ tests and now allows for the response to intervention model as an alternative for diagnosing and working with children with disabilities (34 CFR § 300.307 a 2). Although the RTI model does not look the same in every school district, there are some common elements. Most models include three tiers, each utilizing more intensive progress monitoring than the previous tier. In tier one, or “primary prevention level,” classroom teachers use “instructional practices . . . with all students: the core instructional program along with classroom routines for differentiating instruction; accommodations that permit access for all students including those with disabilities” (Fuchs & Fuchs, 2009, p. 250). In tier two, or “secondary prevention level,” students are in “small group tutoring . . . typically 10-15 weeks of 20-40 minute sessions . . . typically for 3 to 4 times per week” (Fuchs & Fuchs, 2009, p. 251). This might be done in the classroom or in a separate setting such as a resource room and typically with the classroom instructor. In tier two, “most students are expected to benefit when a validated tutoring protocol is used with fidelity” (Fuchs & Fuchs, 2009, p. 251). Students

might move into tier two for extra support from a certified teacher in small groups, and then once success has been achieved, move back into tier one. In tier three, or “tertiary prevention level,” classroom and special education teachers “establish individual year-end goals . . . and tertiary interventions are individualized” (Fuchs & Fuchs, 2009, p. 251). Special education services are provided in tier three for students who struggle in tier two. Only if the students in small group tutoring at tier two do not illustrate academic success, do they move to tier three, which is special education services. It is also important to note that if students have been unresponsive to the interventions at primary and secondary levels, then students at the tertiary level will require “a highly skilled instructor such as a well-prepared reading specialist or special educator” (Fuchs & Fuchs, 2009, p. 251). The RTI model is intended to help each student achieve academic success by using instructional strategies and progress monitoring to assess a student’s strengths and needs in the general education classroom.

These levels are included in most RTI models used by schools. To meet students’ needs at each tier, teachers might incorporate such things as problem solving, small group tutoring, scaffolding, progress monitoring, and differentiating instruction. Although progress monitoring plays an important part in RTI, RTI is also a model for providing quality instruction that meets each child’s unique learning strengths and needs. Burns and Gibbons (2008) emphasize that the goal of RTI is “to enhance the learning of all children” (p. 5).

Theoretical Framework

Critical to Vygotsky’s (1978) learning theory is what he called the “zone of proximal development,” or ZPD (p. 84). Vygotsky’s (1978) learning theory provides an

important conceptual framework for understanding and researching RTI, since his theory focuses on the construction of learning.

Zone of Proximal Development

Vygotsky (1978) defined zone of proximal development (ZPD) as “. . . the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86). This distance or “zone” is where instruction should focus. Brown and Campione (1994) maintained that Vygotsky’s theory of ZPD “embodies a concept of readiness to learn that emphasizes upper, rather than lower, levels of competence . . . as the learner becomes increasingly independent at successively more advanced levels” (p. 236). The goal is that as instruction targets the zone for students, and as they continue to learn, their zone continues to progress. This leads students to become “increasingly independent at successively more advanced levels” (Brown & Campione, 1994, p. 236). Because students’ zones continually fluctuate, teachers must apply just the right amount of challenge, so that students continuously learn more difficult tasks. In addition to the importance of students becoming “increasingly independent,” the ZPD is “future oriented” (Levykh, 2008, p. 99). Teachers working with a student’s ZPD are constantly thinking about where the student could be with assistance in the hopes that “sometime in the future” the student will be at that point in her learning without the help (Levykh, 2008, p. 99). Levykh (2008) states that “the ZPD appeals to the whole personality and builds upon the student’s previous affective and intellectual knowledge and experience as it establishes creative teaching-learning environments . . . that promote mutual respect

and trust” (p. 99). Teaching from the perspective of meeting each child’s ZPD demands that teachers know each child’s learning strengths and interests. As teachers study their students, they learn more valuable tools to help each child, and they develop a positive relationship with each student in the process.

The zone of proximal development is at the core of Response to Intervention in that RTI works to “seek instruction and intervention that will allow a child to be successful . . .” (Burns & Gibbons, 2008, p. 5). In addition, in tier 2 of RTI more frequent progress monitoring is required to help students succeed. Fuchs and Fuchs (2009) describe tier 2 of RTI as “empirically validated, adult-led, small-group tutoring” to help students become academically successful (p. 251). One way for students to succeed is to tie instruction to the right level of challenge without going beyond or below each student’s zone. Teachers must monitor each student’s progress in each learning situation or task to provide the best level of challenge to meet his/her ZPD, which is also what must take place in tier 2 of RTI. Teachers need to know both the actual level of development and the potential level for each student.

Scaffolding

Scaffolding is also an important element in students reaching their ZPD. The term “scaffolding” was first used by Wood, Bruner, and Ross (1976), and it is defined as a “process that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted efforts” (p. 90). Wood et al. (1976) further described scaffolding as a process where the tutor or teacher,

1. Enlists the [students’] interest

2. Reduces the size of the task to the level where the learner could recognize whether or not he achieved ..the task requirements
3. Keeps [learners] in pursuit of a particular objective and makes it worthwhile for the learner to risk a next step
4. Accentuates certain features of the task that are relevant
5. Maintains frustration control without dependency on the tutor/teacher
6. Provides a model of the solution or product (Wood et al. 1976, p. 98).

As the ZPD continually changes, depending on the learning of the student and the task, teachers continue to scaffold instruction such as connecting instruction to students' interests, needs and prior knowledge to stay in each student's ZPD.

Both ZPD and scaffolding are used simultaneously by teachers who are teaching in an RTI model. As students continually progress, the scaffolding adjusts for the new tasks. At some point in the student's progress and when the student has achieved learning in that area, the scaffolding can be removed for that particular skill or concept. To successfully implement scaffolds or supports, teachers are continually monitoring progress and problem solving, aspects which are also critical to successful implementation of RTI.

RTI, in many cases, incorporates at least some problem solving methods. Burns and Gibbons (2008) include the following steps used for problem solving: "problem identification, problem analysis, developing a hypothesis, plan development, plan implementation, and plan evaluation" (p. 92). These steps include what is called a

“problem solving team” to support the needs of a student who is not succeeding in the classroom. The problem solving elements and the collaboration between the teacher and the student align with the work of Vygotsky (1978), namely, that “what a child can do with assistance” (p. 85), is critical to meeting the student’s zone of proximal development and scaffolding becomes a way to accomplish that.

Social Construction of Learning

In addition to ZPD and scaffolding, Vygotsky (1978) also argued that, “learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers” (p. 90). His theory is that learning is a social endeavor that “presupposes a specific social nature and a process by which children grow into the intellectual life of those around them” (Vygotsky, 1978, p. 88). The “social nature” of learning emphasizes the importance of interaction and cooperation not only between teachers and students but also among the students (Berk & Winsler, 1995).

Social construction of learning is also important in the RTI model. Whereas good teachers use a variety of instructional strategies to support the learning of all students, in the traditional model of serving learning disabled (LD) children, “it is almost impossible for many children to score low enough on a standardized norm-referenced achievement test in order to cause a discrepancy to appear” (Burns & Gibbons, 2008, p. 7). RTI serves all children at tier 1 with “sound core curriculum” (Burns & Gibbons, 2008, p. 39). If a few students are not meeting the goals at tier 1, the teacher does not have to wait for IQ and other testing results but can provide small group instruction “matching the student skill to the intervention” (p. 79). This can be done by an “expert in the academic area of

need” or by the classroom teacher depending on the district’s policies and procedures (Burns & Gibbons, 2008, p. 80). It is only at tier 3, after efforts in tiers one and two have not resulted in improved learning for the child, that more intensive one-on-one instruction takes place. This intensive instruction at tier 3 involves the classroom instructor, a reading specialist, and the special education teacher all working together and includes ongoing progress monitoring (Burns & Gibbons, 2008, p. 47). In RTI, children stay with and continue to interact with their general education teacher and their peers as much as possible (Burns & Gibbons, 2008, p. 8).

Because of the emphasis in delivery, evaluation, and monitoring of instruction in general education as opposed to special education in tiers 1 and 2 of RTI, classroom instructors are specifically involved and in charge of the interventions. Since today’s preservice teachers will be tomorrow’s classroom instructors working with students who struggle, they need to be able to successfully meet all learners’ needs and meet the expectations of K-12 schools. This will require preservice teachers to know about RTI and be able to implement it by scaffolding instruction, differentiating instruction, and using formative assessments to match instruction to students’ needs. One of those expectations is that they will be able to implement the RTI process in their classrooms. However, as RTI is fairly new, the question arises: Do preservice teachers have the knowledge and the skills needed to successfully implement RTI? Currently, little research is available that explores preservice teachers and their readiness to implement tiers 1 and 2 of RTI. This study focuses on the perceptions of preservice teachers’ just after student teaching. Namely, do they perceive that they have the knowledge and skills to implement the components of RTI in their classes?

Statement of Problem

With the reauthorization of No Child Left Behind (2004) and Response to Intervention being adopted by many K-12 schools (Bradley et al., 2011), teacher education programs are trying to respond quickly to the changes. One study has been done to date regarding preservice training and RTI in the areas of special education and school psychology by Hawkins, Kroeger, Musti-Rao, Barnett, and Ward (2008). This study included “a trainee from each program,” both special education and school psychology (Hawkins et al., 2008, p. 748). The researchers suggested that collaboration between regular educators and special education professionals in higher education and K-12 settings would be beneficial. Another study, done by Allen and Blackston (2003), “examined the effects of training preservice teachers in collaborative problem solving, specifically collaboratively developed intervention scripts” (p. 22). Five elementary education preservice teachers participated in the Allen and Blackston (2003) study. While the study did not focus on preservice teachers’ perceptions of their knowledge and skills of RTI, it did examine their use of interventions and “adherence to interventions” (p. 22). The findings indicated that preservice teachers should have chances to apply the skills they learn and that “collaborative problem-solving training” is critical given the demands of NCLB and IDEA 2004 (p. 48). Neither of these two studies focused on the perceptions of general education preservice teachers in their knowledge or use of RTI. By general education teachers, I mean teachers who are elementary education classroom teachers and secondary education classroom teachers. Since RTI at tiers 1 and 2 involves heavily the general education classroom instructor, research is needed regarding the knowledge and skills of preservice teachers in general education fields. For example,

research conducted by Marston, Muyskens, Lau, and Canter (2003) in the Minneapolis school district regarding RTI implementation found that “for general education teachers there is greater emphasis on providing a range of interventions in the classroom rather than using an exclusive ‘grade-level’ curriculum that dictates instruction” (p. 189). In addition, Marston et al. argued that “the general education teacher implements a range of instructional strategies . . . and must be familiar with indices that can be frequently used to measure ongoing student growth” (p. 190). Given the expectations for knowledge of instructional strategies to use, monitoring progress, and meeting learner needs, do we know if preservice teachers have a knowledge base and are prepared to implement the key components of RTI in their classrooms?

Need

RTI is a general education and special education initiative (Burns & Gibbons, 2008; Fuchs & Fuchs, 2009) therefore, it is imperative to know the perceptions of preservice teachers with regard to their knowledge and skills in implementing RTI. In the *IDEA National Implementation Study* (Bradley et al., 2011), issued by the U.S. Department of Education, 75% of the 867 districts using RTI reported that “RTI implementation was led by a team of both general and special educators” (p. 57). This study also found that “all [the] states reported state-level initiatives for RTI for school-age children and youth” (p. 65). Since *all* states report “state-level initiatives” of some form, it is imperative that preservice teachers understand and are able to implement tier 1 of RTI (65). In addition, this national study also reported that “71% of the 626 districts reported that RTI was used” (p. 65). This is almost three quarters of the 867 districts included in this study. The implication is that RTI is being implemented in many states

in the U.S. and because of this, preservice teachers need to be prepared to implement RTI in their classrooms.

Not only are many schools across the U.S. implementing RTI, but “the primary source of funding for RTI comes from district general funds for 48% of the districts implementing RTI” (Bradley et al., 2011, p. 65). With resources coming from general education funds for half of the districts in the U.S. implementing RTI, this can no longer be viewed as an initiative that is only special education.

While no research to date has been published regarding preservice teachers’ perceptions of knowledge and skills and RTI, Brownell, Sindelar, Kiely, and Danielson (2010) explored special education teacher preparation and RTI. Brownell et al., (2010) argue that “special education teachers must be responsible for providing tier 3 instruction, as well as collaboratively planning tier 2 instruction with their general education colleagues” (p. 373-374). The authors concluded by stating that “special education preparation is at a critical juncture . . . our future depends on our capacity to upgrade the quality of teacher preparation and influence policies that govern teacher incentive systems” (p. 374). Clearly, not only is the preparation of special education teachers at a “critical juncture” but the preparation of all teachers is at a “critical juncture,” given that RTI requires the collaboration and support of both special education teachers and general education teachers.

What is currently unknown and needed is information regarding preservice teachers’ perceptions of their knowledge and skills implementing RTI in their classrooms. The answers to these questions might help inform teacher education

programs as they work to prepare preservice teachers for licensure and careers in K-12 schools.

Pilot Study

I conducted a pilot study in the fall of 2010 as part of the requirements for the course EFR 517: Advanced Research Methods. The purpose of this study was to discover the perceptions of preservice teachers' knowledge and implementation of RTI. I was curious if more specific courses such as special education classes, assessment classes, methods classes, and the number of practica would change preservice teachers' perceptions of their knowledge and implementation of RTI. I was also curious if the perceptions of preservice teachers would be different if RTI was used by the cooperating teacher(s) in the student teaching placement school. The research questions were:

What perceptions do preservice teachers have regarding their knowledge of RTI?

What perceptions do preservice teachers have regarding scaffolding their instruction?

What perceptions do preservice teachers have regarding differentiating their instruction?

What perceptions do preservice teachers have regarding formatively assessing student learning?

This pilot study included a convenience sample of thirty-two preservice teachers who had completed a practicum but had not yet student taught from a small, upper plains university. This study was used to help refine the survey questions about RTI and help to check for internal validity. I was hoping to find out that the constructs were internally consistent. With regard to the constructs of scaffolding, differentiating instruction and

assessing student learning, a high percentage of all preservice teachers surveyed responded with some form of agreement. As far as internal consistency of the survey constructs, it was adequate with .666 for scaffolding, .673 for differentiating instruction, and .706 for assessment. The pilot study survey was slightly revised for this current dissertation study. Four open-ended questions were added for participants to share information or comments about their experiences with teaching exceptional children, any additional information they would like to add, and how they learned about RTI. In addition, they were asked to indicate the number of a variety of education courses listed on the survey that they might have taken up to this point in their program of study. The final change was the addition of “I believe” to every Likert-type survey question since the survey was about their perceptions of their knowledge and skill of RTI.

Purpose of Current Study

The purpose of this study was to collect and analyze data regarding preservice teachers’ perceptions of their knowledge and their classroom practices that relate to RTI. As stated previously, RTI is only as successful as its implementation in tiers 1 and 2, which are the responsibility of the classroom teacher. As teacher education programs help prepare teachers for licensure and their career in teaching, we want to know the knowledge base and use of the components of RTI from the preservice teachers’ perspective. Their perceptions are critical to knowing whether or not teacher education programs are meeting their needs in the area of RTI knowledge and use.

Research Questions

What perceptions do preservice teachers have regarding their knowledge of RTI?

What perceptions do preservice teachers have regarding scaffolding their instruction?

What perceptions do preservice teachers have regarding differentiating their instruction?

What perceptions do preservice teachers have regarding formatively assessing student learning?

Delimitations

This study will be conducted with the following delimitations:

1. This study included Upper Plains elementary and secondary preservice teachers who completed their student teaching in the fall of 2011.
2. This study included three Upper Plains universities.
3. Contact was made with the student teaching placement coordinators in Teacher Education departments at three Upper Plains universities.
4. The researcher distributed surveys to interested elementary and secondary preservice teachers in a capstone course at the end of the fall 2011 semester at the three Upper Plains universities. If preservice teachers were absent, they were excluded from the survey.

Assumptions

The following assumptions in this study were

1. The elementary and secondary preservice teachers would be a representative group of preservice teachers from the Upper Plains.
2. The elementary and secondary preservice teachers answered, honestly and accurately, the survey questions for this study.

3. RTI is a good model for meeting the needs of struggling students.
4. The survey instrument was a good instrument for measuring preservice teachers' perceptions of their knowledge and skills of the RTI model.

Definitions

Discrepancy model is described by Burns and Gibbons (2008) as a process whereby “children [are] identified with a learning disability (LD) only if there [is] severe underachievement as compared to the child’s intelligence” (p. 2).

General education is defined as elementary education teachers and secondary education teachers.

Individual Education Plan (IEP) is defined by the Individuals with Disabilities Act (IDEA 2004) as “a written statement for each child with a disability that is developed, reviewed and revised in a meeting” (34 CFR § 300. 320-324).

Other Health Impaired (OHI) is defined by IDEA 2004 as “having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, such as chronic or acute health problems as asthma, attention deficit disorder and other health related issues” (300.8.9 Child with a disability)

Preservice teachers are defined as individuals enrolled in teacher education programs who are not yet licensed to teach.

Problem-solving model is a decision making process regarding interventions implemented based on student needs through assessments that follow the pattern of, “teach-test-teach-test” (Marston et al., 2003). Also see Burns & Gibbons, 2008.

Progress monitoring is defined by the National Center on Student Progress Monitoring (n.d.) as a process "used to assess students' academic performance, to quantify a student rate of improvement or responsiveness to instruction, and to evaluate the effectiveness of instruction. Progress monitoring can be implemented with individual students or an entire class (National Center on RTI, n.d., glossary of terms: Progress monitoring section of the website).

Response to Intervention (RTI) is defined by the National Center on Response to Intervention as "... assessment and intervention within a multi-level prevention system to maximize student achievement and reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities (National Center on Response to Intervention, n.d., glossary of RTI terms: Response to Intervention (RTI) section of website).

Scaffolding is defined as a "process that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted efforts" (Wood, Bruner, & Ross, 1976, p. 90). In this process the tutor or teacher, "enlists the [student's] interest, reduces the size of the task to the level where the learner could recognize whether or not he achieved the task requirements, keeps [a learner] in pursuit of a particular objective and makes it worthwhile for the learner to risk a next step, accentuates certain features of the task that are relevant, maintains frustration control without dependency on the tutor/teacher, and provides a model of the solution or product (Wood et al. 1976, p. 98).

Students are referenced throughout this study in the writing as well as the tables and appendices that include the surveys and construct map. In every place, student and students refer to K-12 students.

Zone of proximal development was defined by Vygotsky (1978) as “. . . the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86).

CHAPTER II

REVIEW OF LITERATURE

The purpose of this study was to discover the perceptions of preservice teachers' knowledge and implementation of RTI. I was curious if more specific courses such as special education classes, assessment classes, methods classes, and the number of practica would change preservice teachers' perceptions of their knowledge and implementation of RTI. I was also curious if the perceptions of preservice teachers would be different if RTI was used by the cooperating teacher(s) in the student teaching placement school. The research questions were:

What perceptions do preservice teachers have regarding their knowledge of RTI?

What perceptions do preservice teachers have regarding scaffolding their instruction?

What perceptions do preservice teachers have regarding differentiating their instruction?

What perceptions do preservice teachers have regarding formatively assessing student learning?

This chapter starts with a history of special education. Section two includes concerns with the discrepancy model in special education. Section three contains a description of RTI: its definition, history, and the two models of RTI: the problem-solving model and the standard protocol model. After the models of RTI, a fourth section

on the concerns with RTI follows covering fidelity or treatment integrity and learning disability identification. In section five, best practices in teacher education and RTI are included that describe two important areas in teacher education and successful implementation of RTI: scaffolding and differentiating instruction. Finally, this chapter ends with a review of studies on RTI and both inservice and preservice teachers as pertain to this study of RTI and preservice teachers' perceptions.

A Brief History of Special Education

Understanding the history of special education provides an important backdrop for the beginnings of RTI. While legislation regarding people with disabilities dates back many years and includes additions and changes to the original law, this section includes only the main features of the laws that relate specifically to special education and schools. This brief background of special education law is necessary before going into some of the concerns with the implementation of special education.

The Rehabilitation Act of 1973 (PL 93-112) was the first major legislation for the protection of rights for people with disabilities and was born out of the move on the part of parents of children with severe disabilities to gain education services (Smith & Arkans, 1974). The parents and their advocates “. . . focused primarily upon getting schools to include those children formerly labeled uneducable” (Smith & Arkans, 1974, p. 497). Previous legislation did not include people with severe disabilities, but the Rehabilitation Act of 1973 did include people with severe disabilities. The terms “handicapped” and “severely handicapped” were both defined in the Rehabilitation Act, but the addition of “severely handicapped” and its inclusion into the law were new. The Federal government defined severely handicapped (the term used in PL 93-112) as a

. . . disability which requires multiple services over an extended period of time and results from amputation, blindness, cancer, cerebral palsy, cystic fibrosis, deafness, heart disease, hemiplegia, mental retardation, mental illness, multiple sclerosis, muscular dystrophy, neurological disorder (including stroke and epilepsy), paraplegia, quadriplegia and other spinal cord conditions, renal failure, respiratory or pulmonary dysfunction, and any other disability specified by the Secretary in regulations he shall prescribe (Rehabilitation Act of 1973, PL 93-112, section 7.12).

The Rehabilitation Act of 1973 now included services for people with severe handicaps (the term used in PL 93-112). The purpose of the revision of previous law was to help “a population of disabled individuals who were not being served but who could, if not become gainfully employed, at least be able to function independently” (LaVor & Duncan, 1974, p. 444). The result of this law was that public schools now needed to educate all children with disabilities, regardless of the severity.

In addition to the Rehabilitation Act of 1973 that required educational services for children with “severe handicaps,” the Act also revised the individualized written programs. The Rehabilitation Act of 1973 required that “. . . the individualized written rehabilitation program . . . [be] developed jointly by the vocational rehabilitation counselor or coordinator and the handicapped individual (or, in appropriate cases, his parents or guardians) . . .” (Rehabilitation Act 1973, PL 93-112, section 102. a). Previous vocation rehabilitation acts had not included the “joint” collaboration with the “handicapped person.” This change was further modified in future laws with regard to children with disabilities.

As a result of the inclusion of children with severe disabilities into public schools, many states around the country began requesting more support for the implementation of the law, including financial support (Warnat, 1978). In addition, parents of children with disabilities were concerned that the law was not being followed, which led to new legislation. In fact, in the opening statement of findings in Education for All Handicapped Children Act, PL 94-142, Congress argued in 1975 that,

. . . the special educational needs of children are not being met, more than half of the handicapped children in the United States do not receive appropriate educational services, . . . one million of the handicapped children throughout the United States are excluded entirely from the public school system, and there are many handicapped children throughout the United States participating in regular school programs whose handicaps prevent them from having a successful educational experience because their handicaps are undetected . . . (Education for All Handicapped Children Act 1975, PL 94-142, section 601 3.a).

The 1975 Act, Public Law 94-142, was created to respond to these and other concerns that had not been addressed in the Rehabilitation Act of 1973.

One significant change was the addition of the term “children with specific learning disabilities” (Education for All Handicapped Children Act 1975, PL 94-142, section 602 4a 20 USC. 1401). Children with specific learning disabilities was defined as children who have a disorder in one or more of the basic psychological processes involved in understanding or in language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. Such disorders include such conditions as perceptual

handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such term does [sic] not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or environmental, cultural, or economic disadvantage.” (Education for All Handicapped Children Act 1975, section 20 USC 1401)

The distinction in this definition is that children with challenges in cognition are included in the definition; however, children who did not have a cognitive disorder were not included. The 1975 Act, Public Law 94-142 helped to clarify definitions of disabilities to distinguish services for children who truly had diagnosed cognitive difficulties from other cases of children being misidentified as disabled due to struggles in school for other reasons not related to disabilities. This might include students who are English Language Learners and are new to English who may struggle with the language, but they do not have cognitive disorders.

In addition, with the 1975 law, the term “individualized education program” (IEP) was introduced. This was a change from the term used in the Rehabilitation Act of 1973, which was individualized written program. The IEP included goals, objectives and annual reporting as had the individualized written program, but the IEP required additional information such as, “present levels of educational performance, [and] . . . the extent to which such child will be able to participate in regular educational programs . . .” (Education for All Handicapped Children Act 1975, PL 94-142, section 602 4.19).

With the addition of the IEP also came the term “least restrictive environment.” Least restrictive environment addressed concerns that children with disabilities were

never allowed to interact with children who did not have disabilities (Abeson & Zettel, 1977). Congress addressed concerns with the past practice of isolating children with disabilities by including in the 1975 Public Law 94-142,

. . . procedures to assure that, to the maximum extent appropriate, handicapped children, including children in public or private institutions, or other care facilities, are educated with children who are not handicapped, and that special classes, separate schooling, or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes . . . cannot be achieved.

(Education for All Handicapped Children Act 1975, PL 94-142, section 615 B)

While this addition to the law was an attempt to provide guidance to the placement of children with disabilities, the interpretation of least restrictive environment is still problematic today.

Many amendments have been made to the Education for All Handicapped Children Act of 1975. One significant change occurred in 1990 with the name changed to Individuals with Disabilities Education Act or IDEA. The removal of the term “handicapped” is due to the negative connotations surrounding the term “handicapped” and that focus on people first was preferred, hence the name opening with “individuals” (IDEA 1990, Public Law 101-476). In addition to the name change, IDEA 1990 or Public Law 101-476 included transitional services for children “from special education to either further education or work and independent living” (Aleman, 1991, p. 4). This addition specifically had not been included in previous legislation. This change required schools and other institutions who served children with disabilities to also provide career

counseling and education on the options available and help families consider not just their children's schooling but their future. The terms "autism" and "traumatic brain injury" were also specifically mentioned in IDEA 1990 (Aleman, 1991). Prior to IDEA 1990, autism was included in the general category of "other health impaired" (Aleman, 1991). This meant a shift of services that would now meet the specific needs and rights of children with autism as opposed to general services in a broad category. Finally, the definition of "special education" in IDEA 1990 was "expanded to include instruction conducted in settings other than schools and traditional classrooms like recreational centers" (Aleman, 1991, p. 8).

Several years after IDEA 1990, IDEA 1997 continued to attempt to address concerns regarding meeting the needs of children in educational settings. One of these concerns was the continued misidentification from over and under identification of children with disabilities, "that is, identifying children as disabled who are not, . . . [and] failing to identify and serve children with disabilities" (Apling & Jones, 2002, Misidentification section, para. 1). The United States was also becoming more ethnically diverse, and parents as well as advocacy groups were becoming more concerned that schools were not meeting the needs of children who were ethnically and linguistically diverse. Congress listed several concerns in IDEA 1997, including the following:

. . . minority children are comprising an ever larger percentage of public school students, . . . limited English proficient population is the fastest growing in our Nation, . . . [g]reater efforts are needed to prevent the intensification of problems connected with mislabeling and high dropout rates among minority children with disabilities, . . . more minority children continue to be served in special education

than would be expected from the percentage of minority students in the general population, poor African-American children are 2-3 times more likely to be identified by their teacher as having mental retardation than their white counterpart, [a]though African-Americans represent 16% of the elementary and secondary enrollments, they constitute 21% of total enrollments in special education, the drop-out rate is 68% higher for minorities than for whites, [and] more than 50% of minority students in large cities drop out of school. (IDEA 1997, PL 105-17, section 601 (c) (7-8)

One of the benefits of Congress recognizing these issues is that it helped to further distinguish and clarify, on the Federal level, language concerns as separate from cognition concerns. Schools were expected to ensure that any child who struggled in school was not placed in special education, if they did not have a learning disability or other diagnosis as set out in IDEA 1997. The concern with misidentification in special education is still a concern today.

In fact, IDEA 1997 specified two criteria that children must meet to receive special education services, “. . . the child must have one or more of the disabilities listed . . . and he or she must require special education and related services” (Knoblauch & Sorenson, 1998, section What Disabilities Entitle A Child To Special Education, para. 3). The first change here is that IDEA 1997 clarified that just because a child had a disability, it did not mean necessarily that the child needed special education services (Knoblauch & Sorenson, 1998). The disabilities listed in IDEA 1997 included:

autism, deafness, deaf-blindness, hearing impairment, mental retardation [the term used in IDEA 1997], multiple disabilities, orthopedic impairment, other health

impairment, serious emotional disturbance, inability to learn, inability to build or maintain satisfactory interpersonal relationships, inappropriate types of behaviors or feelings, general pervasive mood of unhappiness, [and] a tendency to develop physical symptoms or fears associated with personal or school problems.

(Knoblauch & Sorenson, 1998, section What Disabilities Entitle A Child To Special Education, para. 3)

As can be seen in the preceding description, Congress recognized the mental health needs of children by including the addition of those related medical conditions in the list of disabilities required for special education services in IDEA 1997.

IDEA 1997 not only addressed concerns with misidentification and clarified conditions for services in special education, but also argued that current educational research findings should be implemented into the education of children with disabilities such as,

. . . having high expectations for such children and ensuring their access in the general curriculum to the maximum extent possible, strengthening the role of parents, . . . providing appropriate special education and related services and aids and supports in the regular classroom to such children, whenever appropriate, [and] supporting high-quality, intensive professional development [for teachers] . . . (IDEA 1997, PL 105-17, section 601 (c) (5) (A-E))

These findings revealed what educators have long known, that is, having high expectations for children helps them to reach goals otherwise thought impossible. This also showed the federal government's response to the continued bidding from parents and

advocates of children with disabilities that their children also deserve the best education possible.

Finally, IDEA 1997 placed a greater emphasis on children with disabilities being placed, when at all possible, in the general education classroom. In special education legislation prior to IDEA 1997, the wording focused on the importance of children with disabilities being with other children. Unfortunately, many schools simply ensured that children with disabilities were in the same building as children not diagnosed with disabilities, a situation that resulted in children not having opportunities to interact with each other. In response to a lack of opportunities for children with disabilities to interact with children who were not diagnosed with disabilities, IDEA 1997 took this a step further by emphasizing that the general education classroom, not just in the school building, be the place where services were to be provided for children with disabilities whenever possible. Children with disabilities were expected to interact with children not diagnosed with disabilities in the general education classroom and with the general education curriculum whenever possible (IDEA 1997). This shift meant that general education teachers would become more involved in the IEP and meeting the goals of the IEP, while also educating children with disabilities to a greater degree than past legislation required. IDEA 1997 spelled out that the IEP should include

. . . how the child's disability affects the child's involvement and progress in the general curriculum . . . meeting the child's needs that result from the child's disability to enable the child to be involved in and progress in the general curriculum . . . and to participate in extracurricular and other nonacademic activities . . . (IDEA 1997, PL 105-17, section 614 d/A/ i/ I – ii/II)

The added emphasis on general education both in terms of placement and curriculum was a change from previous legislation and marked a change in perspective. As a result of IDEA 1997, general education teachers were given an opportunity to be much more involved in the education and the planning of appropriate educational opportunities for children with disabilities. This was a positive step for children, since the general education teacher, unlike the special education teacher, is the content pedagogy expert. This law also meant an evolving role for special education teachers. Now, special education teachers could work to support the general education teacher in the general education classroom, as opposed to working solely in the special education resource room.

The evolution of roles for the general education and special education teachers was further supported with the reauthorization of IDEA 2004. IDEA 2004 allowed for alternative methods of identifying and placing children in special education by using scientifically based approaches, and no longer required use of the comparison of the IQ score to the achievement score to determine special education eligibility. The change meant that traditional roles that both the general classroom teacher and the special education teacher held were changing.

The history of special education provides important insight into the efforts of the Federal government to respond to the needs of children with disabilities. The public laws and the changes made to them over the years show that the implementation of special education has not been without problems and controversy, and more importantly, has not yet fulfilled its potential for meeting the needs of all children.

Concerns With Special Education

As noted in the previous section, special education has been fraught with concerns and problems regarding the education of children with disabilities. In this section, four areas of concerns with the traditional implementation of special education are discussed: labeling, misidentification, criteria for qualification, and the “wait to fail” effect. These concerns were alluded to in the history of special education, and are further explored in this section.

Labeling

One of the concerns with special education has been labeling. Dunn (1968) was an early critic of the label used at the time for severely disabled, “mentally retarded” (p. 9). Dunn’s (1968) argument against labeling was his concern over both the lowered expectations of the teachers serving children with the label, and the detrimental effects of the label on the children themselves. Dunn’s (1968) concerns were noted prior to the Rehabilitation Act of 1973. Unfortunately, the concern over labeling did not end with the Rehabilitation Act of 1973 or Public Law 94-142, the Education for All Handicapped Children Act of 1975.

Studies on the negative effects of labeling on children and the effects of lowered teachers’ expectations because of labeling continued in the late 1970’s, implying that previously, enacted public laws had not stopped the labeling issues with special education and the treatment of children with disabilities. Gillung and Ruckner (1977), in a study comparing teachers who used labels to teachers who did not and their expectations, found that regular education teachers and special education teachers both had lower

expectations for the labeled children than for the unlabeled children with similar behaviors.

Even into the 1990's, after IDEA 1990 and IDEA 1997 legislation, advocates and researchers interested in the education of children, particularly children with disabilities, continued to be concerned that the labeling of children not only affected teachers' expectations in negative ways, but that the labels also harmed children (Haring et al., 1992; Redden et al., 1999). The problem of labeling children is that it "can be a lasting stigma that, in many cases, follows students throughout their school careers" (Haring et al., 1992, p. 164).

Even after the recent legislation of IDEA 2004, studies continued to illustrate concerns about labeling and their harmful effects. While the term "retarded" has all but been removed from recent legislation in special education, a new label was having a similar negative effect. Mandell, Davis, Bevans, and Guevara (2008) studied children who had been diagnosed with Attention Deficit/Hyperactive Disorder (ADHD) and discovered, ". . . ethnic disparities in special education services and labeling in a large sample of children who had been diagnosed with ADHD" (p. 47). The children with ADHD who were labeled as emotionally disturbed (ED) did not do as well academically as children with other disabilities (Mandell et al., 2008). Not only did they suffer academically, but within the group of children labeled as emotionally disturbed "the higher proportion of Black children with the ED label resulted from a bias in the special education classification process" (Mandell et al., 2008, p. 48). While the "classification process" had long been held as the argument for labeling, as it supposedly helped educators make placements and provide services to children with disabilities, the Mandell

et al. (2008) study showed, as did Haring et al. (2009) and Redden et al. (1999), that classifying/labeling had been doing more harm than good for children with disabilities.

Misidentification

While labeling has been a serious issue within special education, misidentification, in some part due to problems with labeling, or rather miss-labeling, has also been a concern in special education. Congressional legislation over the years has attempted to help solve the problem of misidentification with definitions and classification guidelines, but this issue is still present today. Misidentification includes both the under identification of children who are disabled but have not qualified for special education services, and over identification of children who have been labeled as disabled, but are not.

Studies have repeatedly shown that ethnically and linguistically diverse students are over identified in special education (Artilles & Trent, 1994; Donovan & Cross, 2002; Dunn, 1968; Fletcher & Navarrete, 2011; Linn & Hemmer, 2011; Mandell et al., 2008; Redden et al., 1999; Sullivan, 2011; Sullivan et al., 2009; Ysseldyke, Algozzine, & Richey, 1982). In fact, with so many studies illustrating the over identification of ethnically and linguistically diverse children in special education, change is well overdue in the practices used to identify, place, and serve children in special education.

Gender differences in the identification of special education children are also a concern. Boys have been shown to be over identified in special education, particularly in the categories of learning disabled and emotionally disturbed within special education (Mandell et al., 2008; Redden et al., 1999). In addition, girls have been misidentified in both the categories of learning disabled and emotionally disturbed (Mandell et al., 2008;

Redden et al., 1999; Ysseldyke et al., 1982). The fact that studies have also shown over and under identification for boys and girls, reveals that the system of identifying children for special education services still has problems today.

Criteria for Qualification

Some contributing causes of misidentification of children in special education are the criteria for qualification, both the IQ testing and the discrepancy formulas.

Traditionally, IQ tests have been used to determine if a child might qualify for special education services by reviewing the discrepancy between a child's IQ score versus an achievement score. Several problems converge here. First, the IQ tests only show where children are now, not where they might be with their learning in the future; however, in practice these tests are also used by schools to determine classification, placement, and treatment of children in special education (Donovan & Cross, 2002; Dunn, 1968;

Gresham & Witt, 1997). IQ tests do not reveal the potential for learning in children and, therefore, are not necessarily valid in determining placements and treatments for children with disabilities. Second, IQ tests are not as valid with young children (Haring et al., 1992; Lyon et al., 2001). The result of IQ tests not being as valid with young children is that early detection of learning issues cannot happen. The lack of early detection with IQ tests leads to another problem, the "wait to fail" effect, in special education that will be covered in the next section. Third, IQ tests have also not been found to distinguish

between children with low achievement and those with a learning disability, contributing to the previous issue of misidentification in special education (Algozzine & Ysseldyke, 1986; Donovan & Cross, 2002; Fuchs, Fuchs, Mathes, Lipsey, & Roberts, 2001; Gresham & Witt, 1997; Haring et al., 1992; Lyon et al., 2001; Vellutino, Scalon, Small, &

Fanuele, 2006). Fourth, IQ tests and their administration are expensive. Because of the high cost and the issues related to IQ tests, they are not worth the time, effort, and cost to administer (Gresham & Witt, 1997; Donovan & Cross, 2002).

In addition to the problems with the IQ tests, are the inconsistencies with state formulas for the discrepancy of IQ score versus achievement score. Some states use higher numbers than others, making placement into special education different from state to state (Bradley et al., 2011; Donovan & Cross, 2002; Lyon et al., 2001). For example, “Alabama, Idaho, Mississippi, Nebraska, and North Carolina require a standard deviation of 1-1.3 between the IQ score and the achievement score to qualify for special education, [but] Minnesota, Montana, West Virginia, and Wisconsin require a standard deviation of ≥ 1.75 ” (Bradley et al., 2011, p. 60). The fact that states are not consistent in determining who qualifies for special education makes this traditional system of implementation unfair and harmful to children with disabilities.

The “Wait to Fail” Effect

As stated previously, one of the concerns with IQ tests are that they are not valid with young children, making children with disabilities difficult to identify (Haring et al., 1992; Lyon et al., 2001). Even though children may not qualify for special education services, they may still struggle in school and wait for services until, at some point in the future, they might qualify for special education services. In effect “we wait - they fail” (Lyon et al., 2001, p. 270). The harmful practice is to wait until third grade in the hope that the discrepancy between IQ score and achievement score is big enough to qualify in that state for special education services (Algozzine & Ysseydyke, 1986; Donovan & Cross, 2002; Dunn, 2007; Lyon et al., 2001). Meanwhile, children in need of educational

support for success, whether it is in reading, math, or behavioral skills, miss valuable assistance and help causing them to struggle and fall further behind (Lyon et al., 2001).

Response to Intervention (RTI)

By 2004, when IDEA was reauthorized and aligned with No Child Left Behind legislation, some schools had already been using alternative methods for identifying children with disabilities, rather than the IQ tests that had long been the method of identification. Concerns regarding misidentification in special education with the use of IQ tests led educators to creating different identification methods.

Response to Intervention (RTI) was an alternative method for identifying children with disabilities and was included in IDEA 2004, although RTI had its beginning with the work of Stan Deno and Phyllis Mirkin as early as the 1970's (Hosp, Hosp, & Howell, 2007; Burns & Gibbons, 2008). Legislation did not include RTI until research and studies conducted on its effectiveness had been reported. In section 300.307 of IDEA 2004, provision was made for RTI to be used by permitting “. . . the use of other alternative research-based procedures for determining whether a child has a specific learning disability” (Individuals with Disabilities Act 2004, section 300.307). The inclusion of RTI in IDEA 2004 marked the beginning of an alternative option for the identification, placement, treatment, and evaluation of the learning of children with disabilities, but also marked the need for schools to better serve children who struggle in school but who may not qualify for special education services. RTI also emphasizes the general education teacher in an even stronger role than IDEA 1997, as implementation of RTI decisions is up to the general education teacher with support from special education and other support staff.

Definition and Description of RTI

RTI is a model for helping all struggling children succeed in any subject, but particularly reading, writing, math, and behavior. The National Center for RTI defines it in their website as a process that

...integrates assessment and intervention within a multi-level prevention system to maximize student achievement and reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities. (National Center on Response to Intervention, (n.d.), glossary of RTI terms: Response to Intervention (RTI) section of the website)

While RTI does not look exactly the same in every school district, there are some common elements. Most models include three tiers, each utilizing more intensive progress monitoring than the previous tier. In tier one, or "primary prevention level," classroom teachers use "instructional practices . . . with all students: the core instructional program along with classroom routines for differentiating instruction; accommodations that permit access for all students including those with disabilities" (Fuchs & Fuchs, 2009, p. 250). In tier two, or "secondary prevention level," students are in "small group tutoring . . . typically 10-15 weeks of 20-40 minute sessions . . . typically for 3 to 4 times per week" (Fuchs & Fuchs, 2009, p. 251). This might be done in the classroom or in "pull out," where services are provided separately from general education such as a resource room, and typically with the classroom instructor. In tier two, "most students are

expected to benefit when a validated tutoring protocol is used with fidelity” (Fuchs & Fuchs, 2009, p. 251). In this model, students might move into tier two for extra support in small groups, and then once success has been achieved, move back into tier one. In tier three, or “tertiary prevention level,” classroom and special education teachers “establish individual year-end goals . . . and tertiary interventions are individualized” (Fuchs & Fuchs, 2009, p. 251). Tier three is where special education services are provided for students who struggle in tier two. Only if the students in small group tutoring at tier two do not demonstrate academic success are they then moved to tier three, which is special education services. It is also important to note that if students have been unresponsive to the interventions at primary and secondary levels, then students at the tertiary level will require “a highly skilled instructor such as a well-prepared reading specialist or special educator” (Fuchs & Fuchs, 2009, p. 251). The RTI model is intended to help each individual student achieve academic success by using instructional strategies and progress monitoring to assess students’ strengths and needs in the general education classroom.

These levels are included in most RTI models used by schools. To meet students’ needs at each tier, teachers might incorporate such things as problem solving, small group tutoring, scaffolding, monitoring, and differentiating instruction. Although progress monitoring plays an important part in RTI, RTI is also a model for providing quality instruction that meets each child’s unique learning strengths and needs. Burns and Gibbons (2008) emphasize that the goal of RTI is “to enhance the learning of all children” (p. 5).

History of RTI

Had I not read the work of Burns and Gibbons (2008), I would not have known that the critical components of RTI such as Curriculum-based Measures (CBM's), created by Deno and Mirkin (1977), started in the 1970's (Burns & Gibbons, 2008). While it is difficult to know when and who first used the phrase "Response to Intervention," as early as the late 1970's behavioral and school psychologists were looking at alternatives to the IQ discrepancy model of special education. Reschly (1978), in his report for the Iowa State Department of Public Instruction, argued that "recent legislation [in special education] has required implementation of nonbiased assessment procedures" (p. 34). Reschly (1978) was responding to the need for assessments that were "nonbiased" to ethnically and linguistically diverse children. Reschly (1978) then discussed ways to ensure that assessments were effective such as "no single source of information used as the sole basis for placement and that a broad variety of information be gathered and considered" (p. 35). As mentioned in the history of special education, problems with special education and its traditional implementation were labeling, misidentification, criteria to qualify and the "wait to fail" effect. Reschly (1978) argued for assessments that were "nonbiased" and the need of school psychologists to "evaluate the effectiveness of the interventions" used (p. 39). While he did not use the phrase "response to intervention," the terms he used such as "assessments, evaluating interventions," and "no single source of information" are used in RTI today.

Reschly (1980) continued to argue that assessment should be evaluated based on the effect of the intervention on the child. Reschly (1980) was responding to the concerns with the discrepancy model and research in alternative assessments at that time

as showing promise to help in the placement and treatments of children with disabilities. Reschly's (1978; 1980) work came out of the Heartland Area Education Agency in Iowa, which was one of the first agencies to implement RTI. In fact, the State of Iowa does not allow the use of the discrepancy model but only allows use of RTI for special education (Bradley et al., 2011, p. 61). So while the first use of the term RTI is unclear, it is clear that practices associated with RTI were beginning to be used in the late 1970's.

Curriculum-based Measures

Curriculum-based Measures (CBM), developed by Deno and Mirkin in 1977, are included in this section, as CBM is at the heart of RTI (Burns & Gibbons, 2008; Hosp et al., 2007; Shores & Bender, 2007). Deno (1985) defined CBM as "measurement and evaluation procedures that teachers could use routinely to make decisions about whether and when to modify a student's instructional program" (p. 221). At this point, it may be helpful to know what CBM is not. CBM is not "an instructional method or intervention, . . . [or] a curriculum" (Hosp et al., 2007, p. 10). According to Hosp et al. (2007), CBM has nine attributes which are:

1. CBM has alignment- students are tested on the curriculum being taught
2. CBM has established reliability and validity
3. CBM uses criterion-referenced measures
4. CBM uses standard procedures: standard tasks for each content area, standard procedures for selecting or constructing testing materials, and standard administration and scoring directions

5. CBM employs direct, *low-inference* measures through which correct and incorrect student behaviors on clearly defined tasks are counted within a set time interval (usually minutes).
6. CBM uses decision rules . . . to provide those who use the data with information about what it means when students score at different levels of performance or illustrate different rates of progress on the measures over time.
7. CBM emphasizes repeated measurement over time and can be used to generate rate of progress as well as level of performance data. This means that CBM data can be used for progress monitoring.
8. CBM is efficient in implementation because people can be trained to administer measures in a short period of time and measures can be quickly given.
9. Finally, CBM data can be summarized efficiently by using a variety of techniques ranging from paper and pencil charts to web-based data management systems. (p. 3-5)

CBM is used to assess all children and their progress as well as identify children who might need extra support. Because CBM emphasizes standard procedures and implementation (point four from above), CBM can be used in the standard protocol model of RTI (National Center on RTI; “progress monitoring tools updated” link). An example of CBM in a reading or English class might be to ask a student to read aloud for one minute from the assigned reading and count the correct and incorrect words spoken in that one minute. In Math, CBM might be the number of correct and incorrect problems a student solved in one minute from the curriculum used. In fact, Hosp et al.

(2007) argue that “if you didn’t know what you were looking for you might not even recognize the administration of the CBM measures as an evaluation” (p. 3). While not included as an attribute of CBM, low cost is also a benefit of CBM (Deno, 1985). As described above CBM is not something separate from the current curriculum but a set of procedures that help to “screen students who might need help, monitor student progress, make diagnostic decisions, and outcome decisions” (Hosp et al., 2007, p. 9). Because CBM is low in cost and uses the current curriculum, it is user friendly for teachers, and CBM is an important component of RTI (Burns & Gibbons, 2008; Hosp et al., 2007; Shores & Bender, 2007). CBM is an aid to assessment, and typically contains “. . . a set of standard directions, a timing device, a set of materials (i.e., passages, sheets, lists), scoring rules, standards for judging performance, and record forms or charts” (Hosp et al., 2007, p. 2-3). CBM, because of its previously mentioned attributes, such as efficiency and repeated measurement, can and often is used in RTI, both the problem-solving model and standard protocol model.

Problem-solving Model

There are two basic models for RTI: the problem-solving model that will be described in this section and the standard protocol model which will be described in the next section. It is important to remember that RTI serves all children who struggle, not just children diagnosed with disabilities, but also is used to identify children who have disabilities. The problem-solving model started in Iowa in the Heartland Area Education Agency (AEA 11). The Heartland AEA 11 serves “24% of the students in Iowa attending 55 public school districts and 32 accredited non-public schools” (Grimes & Kurns, 2003, p. 2). The Heartland AEA 11 implemented the problem-solving model in the early 1980’s

in response to the concerns with traditional special education implementation (Jankowski, 2003; VanDerHeyden & Burns, 2010). Heartland AEA 11 wanted to use a different system to support not just children with disabilities, but all children who struggled either academically or behaviorally.

The problem-solving model is “intended to find the educational strategy(ies) or intervention(s) that will best meet the needs of a student” (Jankowski, 2003, p. 31). Note here that the model looks to meet “a student’s” needs. The problem-solving model focuses on individual students and the plans and assessments used are tailored for each individual student (Jankowski, 2003; Shores & Bender, 2007). This is a subtle but important distinction between the problem-solving model and the standard protocol.

Within the problem-solving model there are four levels of problem-solving:

- Level one - Consultation between teachers and parents. Problem solving involves consultation between a classroom teacher and [the] student’s parents.
- Level two - Consultation with other resources including building assistance team of teachers who work together and are trained to support other teachers. This includes putting effective interventions in place and conducting ongoing monitoring to determine the efficacy of interventions.
- Level three - Consultation with the Extended Problem-solving team. The team typically includes a school psychologist, and educational consultant, school social worker, and other specialists if needed.
- Level four - Consideration of entitlement for special education. The entitlement is determined using the information gathered at each of these levels of the problem-solving process. (Jankowski, 2003, p. 31-32)

As can be seen from the foregoing information, each level adds more intensive support and resources while using a problem-solving process at each level to gather information, implement strategies and interventions, document results, and evaluate those results.

CBM can and often is used as a part of the data-based decisions at each level.

The problem-solving process used at each level of this model includes:

- Define the problem: What is the problem? Why is it happening?
- Develop a plan: What is going to be done about the problem?
- Implement Plan: Is the plan being implemented as intended?
- Evaluate: Did the plan work as intended? (Jankowski, 2003, p. 33)

This process is used at every level (1-4). While there are other researchers who describe the “problem-solving process” used in this model, I have cited the model used by Heartland AEA 11 because Heartland “. . . remains one of the best-known and most well-respected RTI implementation sites in the country” (VanDerHeyden & Burns, 2010, p. 12). The problem-solving model includes four levels of problem-solving approaches that are more intense at each level and incorporate a problem-solving process at each level. It is also important to note, as stated earlier in this section, that this process is done for each child who is struggling academically or behaviorally and that the interventions used are individualized for each child.

Finally, it is important to note that one of the largest studies exploring the results of the problem-solving model came out of the Heartland AEA 11. Tilly (2003), at the Responsiveness-to-Intervention Symposium in Kansas, MO, reported the results of a study conducted from 1996 through 2004 by the Heartland AEA 11 that included “53 Heartland Districts and 121 Heartland schools across the past four years” (“Results of a

three tiered model implementation,” para. 1). The results showed that students’ oral reading fluency grew in each year of the study for first through third grades, and there was a decline in new special education placements in first through third grades from 1996-2004 (Tilly, 2003). The results demonstrated that not only could RTI help to prevent over identification in special education, but it could also help teachers better serve all children who struggle.

Standard Protocol Model

The standard protocol model is another option for implementation of RTI. It is defined as

. . . a set of standard research-based interventions usually implemented in two, three, or four tiers or levels . . . and are similar for all students. (Shores & Bender, 2007, p. 12)

In this model, unlike the problem-solving model, all children who are struggling receive the same intervention (Shores & Bender, 2007; Vaughn et al., 2008). Whereas in the problem-solving model, the interventions are individualized.

The National Center on RTI lists the research-based interventions that can be used with the “standard protocol.” Some of the interventions included on this list are: CBM for math and reading, described earlier in this chapter, AIMSweb for math and reading, phonological awareness literacy screening (PALS), Dynamic Indicators of Basic Early Literacy Skills (DIBELS), and mClass Math to name just a few (National Center on RTI, “progress monitoring tools updated”). It is important to note that any one of these or a combination may also be used in the problem-solving model of RTI for data collection purposes in every step of the process and model. The difference between the two is that

the problem-solving model focuses on individualized interventions, while the standard protocol model uses interventions with groups of children who are struggling in similar areas.

Like the problem-solving model, the standard protocol model also has studies showing its results. One of the largest studies was conducted by Vellutino, Scanlon, Small, and Fanuele (2006). This study spanned five years from 1997 through 2002 and included 1,373 children. The researchers used small-group early literacy intervention program “with a certified teacher (trained by project staff) twice each week for 30 minutes each session” (Vellutino et al., 2006, p. 159). The children were screened initially in kindergarten to test risk for reading difficulties, and randomly split into either the project group (using standard protocols) or the school program (Vellutino et al., 2006). The children in the project group “were provided with small-group early literacy intervention program (2 to 3 children per group) . . . with a certified teacher (trained by project staff) twice each week for 30 min [sic] each session” (Vellutino et al., 2006, p. 159). By 2002, five years after the study was initiated, all children in the project group showed improvement in reading, and the group of struggling readers that was identified as “no longer at risk” at the end of this study performed at similar levels as their peers who had been identified in kindergarten as average readers (Vellutino et al., 2006). The reading improvement the children made in this longitudinal study showed positive results related to early implementation of the standard protocol model with children who struggle.

Concerns With RTI

While RTI is promising in its ability to help all struggling learners, and RTI-related research illustrates that children do make gains as mentioned in the sections of the two models, there are two concerns regarding RTI: fidelity, or treatment integrity and learning disability identification.

Fidelity or Treatment Integrity

Fidelity or treatment integrity is defined as “. . . the extent to which an intervention is implemented as originally designed” (Lane, Bocian, MacMillian, & Gresham, 2004, p. 37). How do school personnel know that whoever was responsible for implementation actually implemented and followed the procedures whether in a problem-solving or standard protocol model? This has been a concern by many researchers who study the implementation and results of RTI (Keller-Margulis, 2012; Lane et al., 2004; Noell et al., 2005; VanDerHeyden, Witt, & Gilbertson, 2007). Various studies illustrate types of treatment integrity and their level of reliability in response to this concern.

For example, Noell et al. (2005), compared treatment strategy of performance feedback (direct measure) to teacher self-ratings (indirect measure) and concluded that the strategy of weekly meetings to discuss implementation, and the strategy of teacher self-ratings of treatment integrity did not guarantee implementation. The strategy that did work was the weekly performance feedback, in this case, provided by a consultant (Noell et al., 2005). These findings are supported by other researchers who also advocated for direct and indirect measures to ensure treatment validity (Keller-Margulis, 2012; Lane et al., 2004; Noell et al., 2005). Direct measures might include collecting products of student work and conducting observations and providing feedback along the

way, and indirect measures might include self-reporting checklists or surveys (Keller-Margulis, 2012).

Direct and indirect measures for improving treatment validity may best be described by considering assessment in higher education. For example, colleges and universities that want to maintain accreditation must show that they are making decisions based on data they have collected, and then they must use that data to evaluate and make improvements and decisions across the entire campus. The same is true for RTI. The only way to truly know if data-based decisions are being implemented and implemented accurately to benefit children, is to collect direct and indirect measures as part of system analysis of RTI.

Schools implementing RTI need to ensure that direct and indirect measures are collected and part of the evaluation of the overall process to ensure treatment integrity. If measures are not taken by schools to ensure treatment validity then the RTI model fails, and more importantly, children suffer.

Learning Disability Identification

In addition to treatment integrity concerns with RTI, learning disability (LD) identification in RTI is also a concern. RTI has not been shown to reliably identify children with learning disabilities (Bender, Ulmer, Baskette, & Shores, 2007; Mastropieri & Scruggs, 2005). As RTI becomes more popular, the question is what happens to the category of LD, since RTI has not been shown to identify children with LD.

Ofiesh (2006) asked an important question about LD identification: “Is it our responsibility as educators to identify a student as one who has a learning disability . . . or simply to provide all children an adequate opportunity to learn?” (p. 883). This is at the

heart of the concern with RTI. What happens to the category of LD if RTI cannot identify children with it, and do we need to continue evaluating and applying the LD category?

The response to this concern has been to use dual discrepancy in RTI to help identify learning disabilities. Dual discrepancy is defined as “level of performance and rate of performance (i.e., slope)” (Case, Speece, & Molloy, 2003, p. 558). If a student’s level and rate of performance drop below their peers, they may need more intensive interventions, and they might also have a learning disability. Researchers agree that more needs to be done in the field of RTI to determine if the dual discrepancy will help to identify children with learning disabilities (Burns & Senesac, 2005; Case et al., 2003).

In conclusion, treatment integrity and the difficulty of RTI to identify children with learning disabilities remain as two concerns within RTI. In both instances, more research is needed to help schools that have implemented RTI do the best job possible on behalf of all children.

Best Practices in Teacher Education and RTI

The history, models, and concerns are important to the conceptualization of RTI, but it is also important to know the relationship between some best practices in teacher education and RTI. While there may be a list of several “best practices” that teachers should employ in the classroom, the two focused on here, scaffolding and differentiating instruction, are not only important practices for teachers to meet all children’s academic needs, they are also critical to successful implementation of RTI.

Scaffolding

Scaffolding is critical in RTI, since it helps students reach their zone of proximal development (ZPD). Although the term “scaffolding” was first used by Wood et al. (1976), it is a metaphor for describing the work that teachers do to help children reach their ZPD on any particular task. Vygotsky (1978) argued that “what children can do with the assistance of another might be in some sense even more indicative of their mental development than what they can do alone” (p. 85). Freire (1993/2005) used Vygotsky’s work to discuss the importance of teaching reading and writing together as valuable and relevant in everyday life (p. 43). Freire (1993/2005) argued that, “when we learn how to *read*, we are preparing to immediately write the talk we socially construct” (p. 43). Freire saw the importance of “social construction” in learning to read and write and offered practical applications of Vygotsky’s (1978) theory. Wood and Middleton (1975) explored Vygotsky’s theory in their study of problem-solving with mothers and their children. In their findings, Wood and Middleton (1975) noted that “the sensitive instructor continually modifies his or her approach to the teaching task on the basis of the tutees responses” (p. 190). Scaffolding is one of the methods that teachers use to challenge each child at the accurate level or zone. Wood et al. (1976) used the term scaffolding to describe what tutors do in helping children “achieve a goal which would be beyond his unassisted efforts” (p. 90). As the ZPD continually changes depending on the learning of the child and the task, teachers continue to scaffold instruction to stay in each child’s ZPD.

Scaffolding requires that the teacher provide assistance that is just at the right level for the child to complete the task without providing too much help. Berk and

Winsler (1995) concurred with the importance of scaffolding, arguing that “keeping children in their ZPD’s “. . . is achieved in two ways: (a) by structuring the task and the surrounding environment so that the demands on the child at any given time are at an appropriately challenging level, and (b) constantly adjusting the amount of adult intervention to the child’s current needs and abilities” (p. 29). Vacca (2008) defines scaffolding as a “technique whereby the teacher models the desired learning strategy or task and then gradually shifts responsibility to the students” (p. 653).

Both ZPD and scaffolding are used by teachers who are teaching in an RTI model. In a study regarding RTI with older children, Vaughn et al. (2008) argued that teachers of reading need to “provide systematic instruction in reading that provides high opportunities for student response with feedback while the teacher scaffolds instruction” (p. 343). As children progress, the scaffolding is adjusted for the new task. Problem solving is also a part of the process that a teacher uses to help scaffold instruction for children. This is due to the fact that there are many options when scaffolding. Wood and Wood (1996) illustrate several scaffolding or “tutoring functions” such as “recruitment of the child’s interest in the task, establishing and maintaining an orientation towards task-relevant goals, highlighting critical features of the task that the child might overlook, [and] demonstrating how to achieve goals and helping control frustration” as a few of the possibilities (“Scaffolding and the Zone,” para. 4).

RTI in many cases incorporates at least some problem solving methods that are undertaken by the classroom teacher in planning the appropriate instruction, assessments and activities. Burns and Gibbons (2008) include the following steps: “problem identification, problem analysis, developing a hypothesis, plan development, plan

implementation, and plan evaluation” (p. 92). These steps include a “problem solving team” to support the needs of a student who is not succeeding in the classroom. The problem solving elements and the collaboration between the teacher and the child align with the work of Vygotsky (1978), namely, that “what a child can do with assistance” (p. 85) is critical to meeting the child’s zone of proximal development and scaffolding becomes a way to accomplish that.

Differentiating Instruction

Differentiated Instruction is a philosophical approach to teaching and learning, and, like scaffolding, is also a critical element of RTI. In practice it means that teachers understand that learning is unique to each child and to each task. Teachers who practice DI will offer different types of options for students. Tomlinson (1999) argues that “teachers in differentiated classes use time flexibly, call upon a range of instructional strategies, and become partners with their students to see that both what is learned and the learning environment are shaped to the learner” (p. 2). Wormeli (2007) argues that when we differentiate “we don’t just adapt our instructional techniques to meet their needs; we prepare students for the variety of learning and life situations they will encounter” (p. 9).

Beliefs. For DI to be practiced successfully, it requires “a professional and responsive mind-set” (Wormeli, 2007, p. 7). To foster this “mind-set,” he suggests a set of reflective questions that should guide all educators who differentiate their instruction:

- Are we willing to teach in whatever way is necessary for students to learn best, even if the approach doesn’t match our own preferences?
- Do we have the courage to do what works, not just what’s easiest?

- Do we actively seek to understand our students' knowledge, skills and talents so we can provide an appropriate match for their learning needs?
- Do we continually build a large and diverse repertoire of instructional strategies so we have more than one way to teach?
- Do we organize our classrooms for students' learning or for our teaching?
- Do we keep up-to-date on the latest research about learning, students' developmental growth and our content specialty areas?
- Do we ceaselessly self-analyze and reflect on our lessons-including our assessments-searching for ways to improve?
- Are we open to critique?
- Do we push students to become their own education advocates and give them the tools to do so? (Wormeli, 2007, p. 8)

These questions may sound like what all good teachers should do, but they are absolutely critical for maintaining the effort required in DI. Self-analysis and reflection on assessments are critical parts of the RTI model. Teachers in RTI must self-reflect about all aspects of their teaching and change strategies and processes as well as product to meet the needs of all learners regardless of whether the child is in tier 1, or tier 2. In fact, RTI necessitates that teachers look, first, to their curriculum, strategies, assignments, and assessments, and differentiate them before looking to the student (Brozo, 2009). In this way, the instruction in all of its various components is first modified before suggesting that the child be referred to special education. This helps to eliminate false positives, over identification of ethnically diverse children in special education, and the “wait to fail before delivering services” issue in the discrepancy model of special education

(Donovan & Cross, 2002). RTI and differentiating instruction actually are partner philosophies.

Dispositions. The beliefs that we have as teachers are shaped from our values and those values are ingrained in our everyday practices in the classroom. Many teacher education programs now include some type of formative assessments around professional dispositions of teachers (The National Council for the Accreditation of Teacher Education, 2008). For DI to be a habit and a way of approaching teaching, teachers need to foster an environment where DI can thrive. Heacox (2002) lists the following qualities that teachers need:

- Promotes acceptance of differences.
- Affirms that all students have learning strengths.
- Acknowledges that students learn at different rates and in different ways.
- Recognizes that for work to be fair, it must sometimes be different.
- Acknowledges that success means different things for different people.
- Allows students to work with various people for various purposes.
- Recognizes that the key to motivation is interest, and that all students have different interests.
- Promotes personal responsibility for learning.
- Builds feelings of personal competence and confidence in learning.
- Values effort and “personal best.”
- Nurtures skills of independence.
- Supports and celebrates student success in challenging work.

- Encourages exploration of each student’s interests, strengths, and learning preferences.
- Nurtures the creative spirit in all students.
- Honors everyone’s work. (p. 12-13)

Several of the items in this dispositions list are also requirements for successfully teaching in an RTI model such as allowing students to learn at different rates and in different ways and creating an environment that encourages those differences (Case et al., 2003).

Practice. Some of the ways in which teachers use DI are to include options for final products such as choices between writing an essay, doing a presentation, performing a skit, or compiling and describing exhibits in a portfolio. DI might provide different due dates or extended time on assignments, allow students to choose what they read for a novel unit, or include centers or multiple ways of teaching a lesson (e.g., using jigsaw, role play, and short lecture in a lesson). It might also be a combination of all of these options. Heacox (2002) illustrates that “differentiated instruction typically involves modifications in one or more of the following areas: content, process, and product” (p. 10). Some of the examples that Heacox provides for differentiating content are “match[ing] learners with appropriate activities according to readiness, giv[ing] students choices about topics to explore, and provid[ing] students with basic and advanced resources that match their current levels of understanding” (p. 10). The examples that Heacox (2002) illustrates for differentiating the “process” include providing visual, auditory and kinesthetic tasks based on the learning styles of the students in the classroom (p. 11). Heacox continues to argue that “. . . by providing greater challenge,

variety, and choice in how students demonstrate or represent what they've learned" you differentiate product (p. 11). DI not only includes changing options for what students produce but also the curriculum that teachers use. DI also requires "teachers to know each of their students as individuals with different interests, learning styles, strengths, and academic needs" (Beecher & Sweeny, 2008, p. 527).

DI has elements of its theory that are part of the ZPD in Vygotsky's theory. Vygotsky (1978) argued that what children can do with assistance is more of an indicator of their mental development. DI is a way to reach each child's ZPD and also utilizes peer teaching and tutoring to help each learner. This fits with Vygotsky's (1978) belief that learning is socially constructed. Providing opportunities for children to interact in meaningful ways with their peers honors the way in which humans learn. The notion that different methods of teaching encourage different types of learning and development is grounded in the work of Vygotsky (1978). DI takes this theory and suggests that differentiating any aspect of teaching including the product, assessment, time for completion, strategies or methods of delivery, or interaction with peers will help students learn and retain the information.

Vygotsky (1978) also argued that any task that a child is to learn be relevant and "meaningful for the children," and 'relevant to life'" (p. 118). Although Vygotsky made these points particularly about writing, these points can be applied to all of learning. DI encourages teachers to review the curriculum because "learners are more likely to succeed when they understand the learning goals and see them as meaningful and personally relevant" (McTighe & Brown, 2005, p. 240). Relevance then is not only desirable in Vygotsky's (1978) learning theory but also in DI. As Tomlinson (1999)

reminds us “. . .teaching mechanics without meaning is counter to the way humans learn” (p. 42).

Teachers who differentiate instruction will also need to “provide support and scaffolding for high quality student success” (Tomlinson, 1999, p. 44). Scaffolding and DI work together to provide an environment where each child can learn. Tomlinson (1999) also reminds teachers that DI is also about providing “moderate challenge” in what we ask students to accomplish (p. 19). She argues that “a task is appropriately challenging when it asks learners to risk a leap into the unknown, but they know enough to get started and have additional support for reaching a new level of understanding” (Tomlinson, 1999, p. 19). Teachers need to be sensitive to what is currently challenging the student because with new learning comes changes. Tomlinson (1999) reminds us that “. . . what is moderately challenging today won’t offer the same challenge tomorrow” (p. 19). Vygotsky’s (1978) work with ZPD implied that as the child learns and then develops, the child’s ZPD will change. DI takes into account that a child will have a different ZPD for each task or project. When teachers differentiate they “invite individual students to acquire, process, and demonstrate knowledge in ways different from the majority of the class if that’s what they need to become proficient” (Wormeli, 2006, Strategy 3, para. 1). This is why DI is an excellent way to meet the differing needs of all children.

DI is also critical to RTI. In the RTI model at tier one there are typically instructional strategies used to meet the needs of all the learners. RTI uses “. . . differentiated instruction for all students in the classroom initiated in tier 1 based on assessments . . .” (Walker-Dalhouse et al., 2009, p. 85). In addition, at tier 2 where the

instructor uses progress monitoring, there is also small group tutoring incorporated to help the learners achieve. Again, DI is also a part of this tier in that a method that works for one child may not work for the others. Problem-solving and collaboration all play a part in the instructors meeting the needs of the learners at every tier. DI and RTI work together to ensure that every aspect of the curriculum and the teaching process meets each child's needs. McTighe and Brown (2005) sum up the beliefs that undergird DI and RTI, i.e., "all learners should be held to the same rigorous standards . . . [but] the pathway each student takes toward achieving understanding and related standards mastery must involve a differentiated approach to content, process and product . . ." (p. 242). It is important in DI and RTI that students understand "that not everyone starts at the same point along the learning continuum or learns the same way" (Wormeli, 2006, Strategy 2 para. 1). This helps students build the confidence needed to work in their ZPD and succeed over time. Differentiated Instruction helps teachers meet children's learning needs and is a critical component of RTI.

RTI and Teacher Education

Not only are best practices in teacher education, particularly scaffolding and differentiating instruction, important to understand and demonstrate in the classroom, it is also critical to review studies that have focused on inservice and preservice teachers' implementation of RTI. As stated in the history section of this paper, RTI has been around since the late 1970's (Burns & Gibbons, 2008; Shores & Bender, 2007). While studies on validity, reliability, and treatment integrity of RTI are numerous, there are few studies on inservice teachers' perceptions of implementation, and fewer yet on preservice

teachers' perceptions (Hawkins et al., 2008). This next section will focus chronologically on inservice teachers and RTI, then preservice teachers and RTI.

Inservice Teachers and RTI

Case et al. (2003) conducted a three-year study to determine if children who frequently performed low and at a low rate of performance (i.e., dually discrepant) showed more difficulty in the general education class than their peers who were either infrequently discrepant or never discrepant with regard to reading. The researchers also analyzed the instruction provided to the children by their general education teachers. Their findings indicated that RTI could distinguish the frequently dually discrepant children from their peers. In addition, the researchers noted that “students’ weaknesses were exacerbated by weak classrooms” (Case et al., 2003, p. 575). Students who struggled the most were the children who were frequently dually discrepant when they were also placed in a weak classroom (Case et al., 2003). Weak classrooms were labeled as such if there were little class management, poor organization, and unclear objectives (Case et al., 2003). This study illustrated that implementing RTI successfully to help children who struggle requires teachers who are strong in many aspects of teaching.

Noell et al. (2005) analyzed treatment integrity by 45 teachers who had referred a child for special education. The researchers collected direct and indirect measures (described in the treatment integrity section) and found that performance feedback improved the integrity of implementing the intervention (Noell et al., 2005). Their study also showed that teachers using RTI need ongoing feedback, support, and training to ensure that the interventions they use are positively meeting children’s needs (Grimes &

Kurns, 2003). Moreover, the training will likely need to be ongoing as needs of the teachers and needs of the children change.

While not a study, Reschly and Wood-Garnett (2009) published a report for the National Comprehensive Center for Teacher Quality regarding teacher qualities needed for successful RTI implementation as:

- [positive] attitudes toward student capacities to learn and beliefs about teacher efficacy
- . . . deep knowledge of the subject., and facility with a range of instructional strategies [matching students' prior knowledge]
- organization and behavior management appropriate to level of students being taught
- defining classroom achievement and behavior problems in objective, observable language
- determining current status through collection of data
- analyzing gaps between current and desired levels of behavior as skill problems
- determining an intervention plan
- implementing the plan
- evaluating the success of the intervention plan. (p. 17-18)

These qualities are not only critical for RTI implementation, they are critical in helping children learn. Dispositions are important to the implementation of RTI and were also the focus of the Case et al. (2003) study. Many teacher education programs include some evaluation or documentation of teacher dispositions for successful completion of their

teacher education training if they are National Council for Accreditation of Teacher Education (NCATE) approved (NCATE, “unit standards in effect 2008” standard 1). Some of these skills with regard to data collection, implementation, and evaluation may require general teacher education programs to include courses on assessment and implementation.

Wold (2009) also studied inservice teachers and their perceptions of RTI. Wold surveyed teachers who worked with children with specific learning disabilities, speech and language pathologists, and directors of special education regarding their perceptions of RTI and their suggestions for RTI training. Wold (2009) found that the participants wanted more RTI training in understanding the RTI model, using problem-solving and especially in data-based decision making. Participants also indicated not knowing the difference between the problem-solving model and the standard protocol model (Wold, 2009). In addition, Wold (2009) recommended that colleges and universities prepare preservice teachers for RTI implementation, and that teacher education faculty stay up to date with RTI. Finally, Wold (2009) suggested that future studies look at how RTI is incorporated into both general and special education programs.

Perry (2012) also conducted a study with inservice teachers which included three university professional development elementary schools. Perry conducted interviews with inservice teachers in the RTI leadership team and teachers who were not on RTI leadership teams. In all, twenty-eight inservice teachers in all participated. They were asked to provide their perceptions of implementing RTI and provide suggestions for training preservice teachers. The participants in both the leadership teams and those not on RTI leadership teams agreed that RTI holds promise for meeting all children’s needs,

but were concerned about assessments, effective curriculum for interventions, and their lack of training to implement RTI (Perry, 2012). In addition, the participants recommended more training for preservice teachers in differentiating instruction and assessment as well as institutions providing more field experiences tied to implementing RTI (Perry, 2012).

Preservice Teachers and RTI

While few RTI and inservice teacher studies regarding RTI implementation exist, there are even fewer RTI and preservice teacher studies. Allen and Blackston (2003) explored the results of training preservice teachers in a collaborative process described as “voluntary participation, parity among participants, at least one mutual goal, shared responsibility, willingness to share resources, and shared accountability for outcomes” (p. 23). These collaboration skills are critical for successful implementation of RTI. Five elementary preservice teachers participated in the study (Allen & Blackston, 2003). The preservice teachers received 25 hours of instruction in collaborative problem solving in the areas of

- collaboration and teaming
- problem identification (logically grouping alterable concerns, and operationally defining terms)
- problem analysis (establishing baseline levels of current behavior, identifying factors contributing to the problem situation, developing a hypothesis about why the problem situation is occurring)

- plan development and implementation (generating, evaluating, and selecting intervention strategies, outlining an intervention script, outlining a progress monitoring plan)
- and plan evaluation [such as] using repeated measures to collect progress monitoring data, graphing of target student behavior, making decisions about adequacy of progress. (Allen & Blackston, 2003, p. 30-31)

The preservice teachers developed their own scripts to use when implementing the interventions. Five elementary student participants were selected because they were in the classroom of the preservice teachers. Performance feedback and self-reports were used to ensure that interventions were implemented to the five students with integrity.

The results showed that the preservice teachers implemented the interventions with integrity, and that they found the scripts they wrote to be easy to follow (Allen & Blackston, 2003). In addition, when performance feedback was used, the treatment integrity improved (Allen & Blackston, 2003). This is similar to the findings of Case et al. (2003), and Noell et al. (2005) as described in the inservice teacher section. Finally, Allen and Blackston (2003) argued that because the scripts were created by the preservice teachers, they understood what they were supposed to do and implemented with integrity because of that. The implication here was that scripts not created by the person implementing the intervention, might have a greater chance of not being followed. Again, training could help ensure that RTI is implemented with integrity.

Hawkins et al. (2008) conducted a study with special education and school psychology preservice teachers who were asked to work with general and special education and school psychologists familiar with RTI interventions and implementation

in an RTI field experience. The preservice teachers worked with kindergarten students who were found to be struggling with reading.

The findings showed that the special education and school psychology preservice teachers needed to have solid instruction and be flexible and willing to change instruction when needed in order to support student learning (Hawkins et al., 2008). They also found that the preservice teachers needed the time to reflect and have practice making accommodations. The researchers noted that one of the challenges to this study and future studies like is making field placements in schools since not all school districts use RTI. The final recommendation was to solicit participation of preservice teachers in secondary and elementary programs in a similar study to this one.

Clearly more studies need to be done regarding preservice teachers' implementation of RTI. What we do know from the research that has been done is that training is needed to ensure that RTI is implemented with integrity in order to live up to its promise of meeting the needs of all children.

Summary

Special education has been controversial throughout its history. The concerns range from labeling, misidentification, criteria for qualification, and the “wait to fail” effect. Response to intervention, which was first included in IDEA 2004, was designed to serve all students who struggle and was a response to the concerns that special education was still not meeting struggling students' needs as mentioned in the beginning of this paragraph. RTI began with research in the 1970's with CBMs, while more recent research has focused on RTI implementation and results in student learning, and RTI has become an alternative for not only serving special education children, but all children

who struggle. While there are two primary concerns with RTI: fidelity or treatment integrity and learning disability identification, various research studies indicate that these two concerns can be addressed effectively. Students can and do show improvement in reading and math within an RTI model. Some studies have been done in the area of inservice teachers and RTI, but very few studies have been done with preservice teachers and RTI.

In Chapter III, I explain the methods and design of the pilot study and the current study.

CHAPTER III

METHODS

The purpose of this study was to discover the perceptions of preservice teachers' knowledge and implementation of RTI. I was curious if specific courses such as special education classes, assessment classes, methods classes, and the number of practica would change preservice teachers' perceptions of their knowledge and implementation of RTI. I was also curious if the perceptions of preservice teachers who were in student teaching situations where RTI was used would be different from preservice teachers who were not in situations where RTI was used. The research questions for this study were:

What perceptions do preservice teachers have regarding their knowledge of RTI?

What perceptions do preservice teachers have regarding scaffolding their instruction?

What perceptions do preservice teachers have regarding differentiating their instruction?

What perceptions do preservice teachers have regarding formatively assessing student learning?

This chapter includes descriptions of a pilot study, the context of the pilot, the demographics of the participants, and an explanation of the instrument used in the pilot study. The current study is similar to the pilot study in including the demographics of participants and an explanation of the current instrument. Data entry information, the

design of the study, data analysis, and biases of the researcher are also included in this chapter.

Context

The participants in the study were elementary and secondary preservice teachers from three Upper Plains universities enrolled in undergraduate, teacher education programs, who had just completed student teaching.

I first became aware of RTI at a workshop I attended in the spring of 2009 conducted by the Minnesota Center for RTI. I was excited that a model existed for helping struggling students particularly if they did not qualify for special education services. I saw this as an opportunity to really support all students, those with IEPs and 504s and those who struggled and did not have IEPs or 504s.

On a personal note, I was interested in RTI because my son, from the time he was seven years old, had struggled with reading and math. He did not qualify for special education services until he was 13. The school did not use RTI, and unfortunately he had to wait to have targeted services until he qualified. This meant that he struggled in both reading and math for six years. Had the school used RTI as their model, my son would not have had to wait for services to support his learning.

As a high school English teacher for 17 years, the process of supporting struggling learners without the collaboration of other services, and waiting and hoping that these students would qualify for special education, was frustrating. Having a model designed to provide targeted services right at the start of difficulty was really exciting. At the time of this conference in the spring of 2009, I was a college instructor in a teacher preparation program for secondary education. I wondered how many of our placement

schools used RTI, and how this might impact our teacher education programs, both secondary and elementary education. This led me to begin searching for studies of RTI related to preservice teachers. Very few such studies existed, and none specifically related to preservice teachers' perceptions and implementation of RTI was reported. The lack of research in this area of RTI led me to this study.

Pilot Study

As part of the requirements for the course EFR 517: Advanced Research Methods with Dr. Steven LeMire, I conducted a pilot study in the fall of 2010. The reason I chose to pursue RTI was two-fold: I needed a study for this course, and as an educator in teacher education, I was curious about the perceptions of preservice teachers regarding their knowledge and implementation of RTI.

Participants for Pilot Study

The pilot study included 32 elementary and secondary education preservice teachers at a small Upper Plains university in the fall of 2010. This Upper Plains university was only included in the pilot study and not included in the current study. Creswell (2008), Cook and Campbell (1979), and Fink and Kosecoff (1985) argued that “a pilot test” can improve reliability, especially if the setting is replicated and the participants who agree to be in the pilot study are not also in the study conducted later. Of the 32 participants, nine were male and 23 were female. The participants included 27 in the ages of 21-23 years of age, and five participants were 24 years of age or older. As far as courses they had taken, 14 of the 32 participants had from 0-2 practica at the time of this survey, and 18 of the 32 participants had from 3-5 practica.

The 32 elementary and secondary education preservice teachers were invited to participate in the study and a script was read to them describing the study and the amount of time it would take. As this was an anonymous survey, the Institutional Review Board waived the written consent form as that would reveal preservice teachers' names. Since all of these students had had me as their instructor, and I did not want the fact that I was their instructor to influence them in any way, two colleagues, one faculty member from elementary education and one faculty member from secondary education, read the informed consent script and handed out and collected the surveys. The preservice teachers were informed, in a read script that if they did not want to participate, or chose to discontinue part way through the study, their request would be honored without any consequences. The preservice teachers were also provided with my name and contact information at the bottom of the informed consent script that they could take with them if they had any questions. Appendix A is the informed consent script that was read and made available to the 32 pilot study preservice teachers.

Instrument for Pilot Study

I began the pilot study by reviewing the literature on RTI and the components of successful implementation which also included research on scaffolding and ZPD, DI and formative assessments. This related-literature research led to creating a construct map before developing the pilot survey. At the University of North Dakota, Dr. Steven LeMire in his graduate research courses encourages students doing research to use what he calls "construct maps" before actually developing any measurement tool (Personal Communication, September 7, 2010). Each construct or theme is based on related literature or relevant theory (Personal Communication, September 7, 2010). The map

helped me conceptualize the constructs to be measured and to ask questions that I judged as being related to each construct. In the development of the construct map, I extracted the most salient features of scaffolding and ZPD, DI and formative assessments that related to RTI. Figure 1 illustrates the construct map for the pilot study.

I next created a survey for the pilot study that included three yes/no questions regarding knowledge of RTI and 12 questions that were on a 6 point Likert-type scale from strongly disagree to strongly agree regarding implementation of RTI in the areas of scaffolding, differentiating, and formatively assessing student learning (see Appendix B). A neutral option was not included, because I wanted participants to choose either some form of agree or some form of disagree. Johns (2010) argues that “some people use the midpoint to avoid reporting what they see as less socially acceptable answers” (p. 7). I wanted the participants to choose and not take the “neutral” as an option. This survey also included demographic questions such as age and gender. The pilot study was important because it allowed me to check that the terms were clear, the tool was easy to complete, to check if any items were unclear, and to assess the amount of time it took participants to complete (Cook & Campbell, 1979; Creswell, 2008; Fink & Kosecoff, 1985). What can really help any researcher is having an understanding of the constructs and definitions or as McGrath and Brinberg (1983) argued “we cannot know what a concept is if we do not at the same time know what it is not” (p. 122).

The reliability and validity of the pilot study survey was done after the surveys were collected by computing the alpha to report the “item-test correlations” (Cronbach & Meehl, 1955). Table 1 shows the alphas for the constructs and the internal consistency.

CONSTRUCTS FOR RESEARCH PROJECT

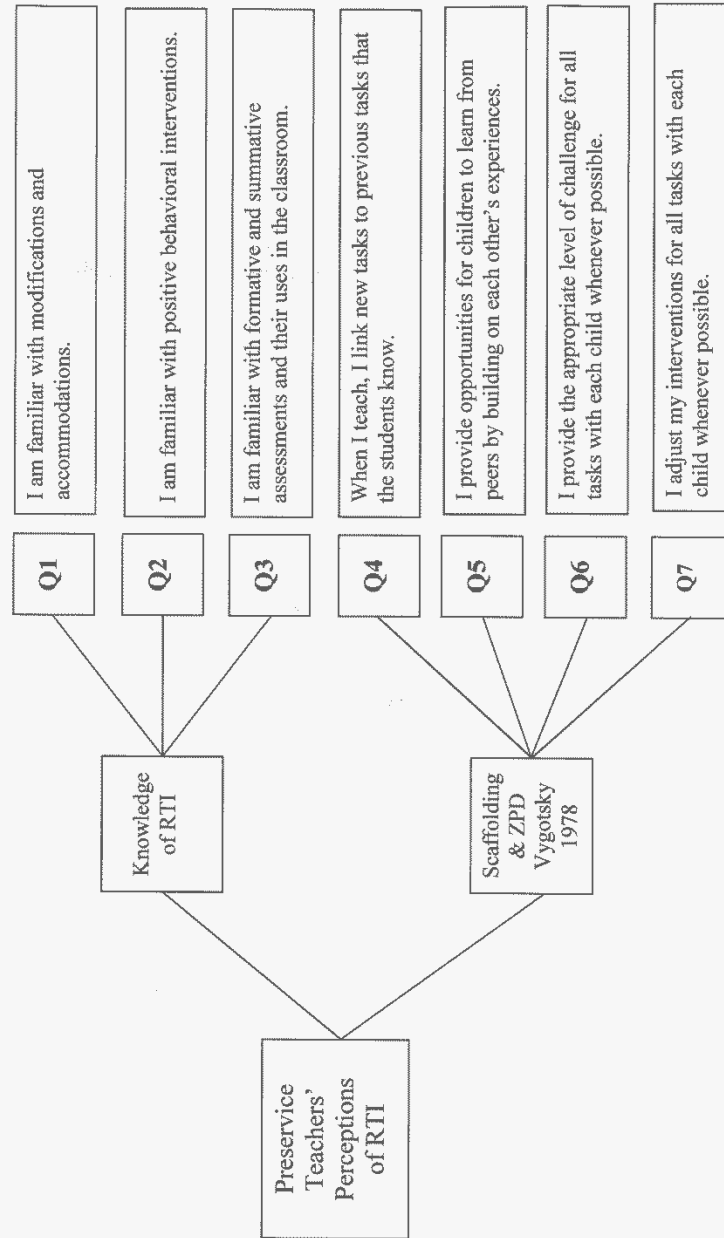


Figure 1. Construct map: Pilot study.

Figure 1 cont.

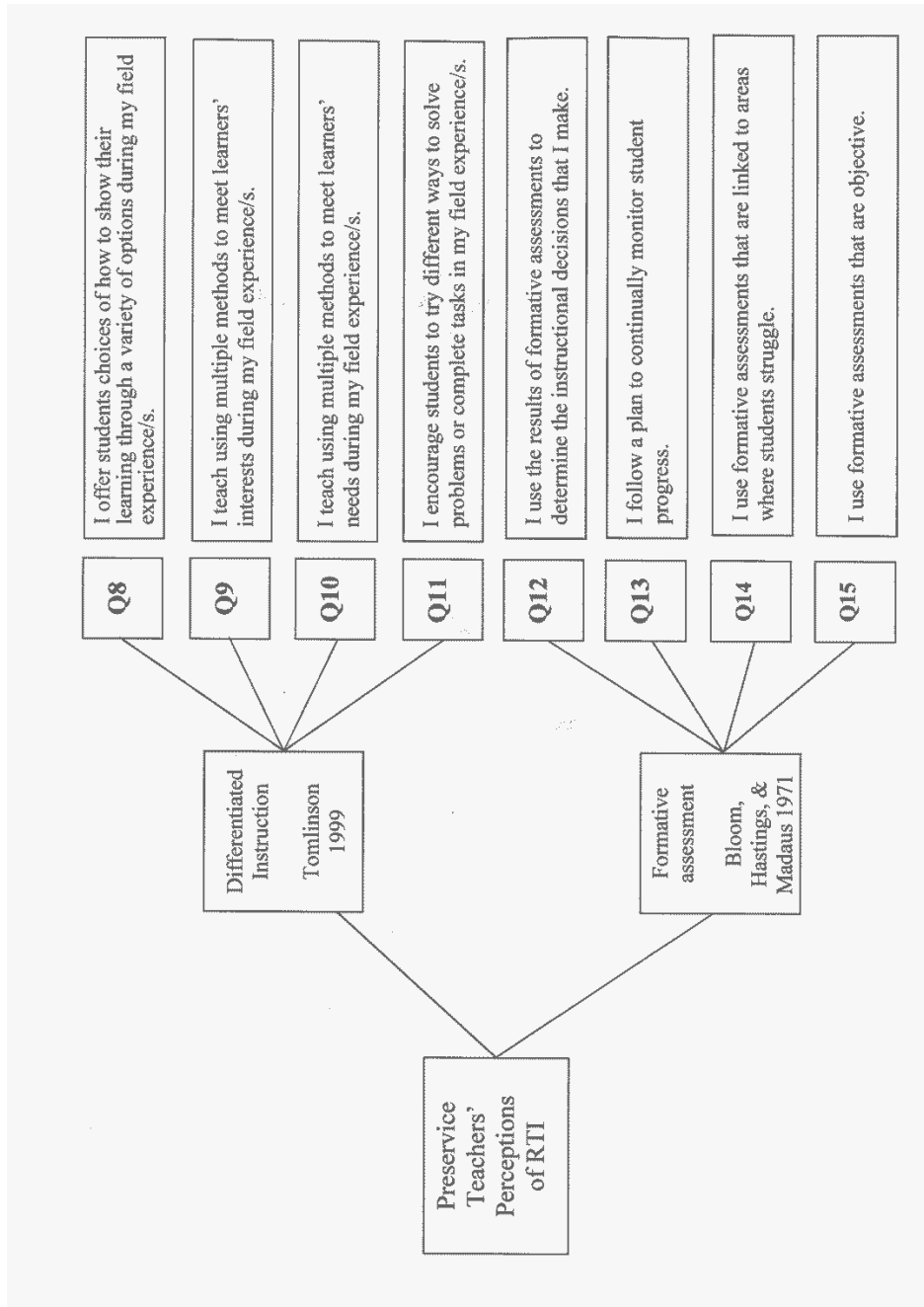


Table 1. Correlation of Subscale Constructs and Measures of Internal Consistency for the Pilot Study.

Sub Scale	Differentiate	Assessment	Cronbach Alpha
Scaffolding	.604*	.505*	.666
Differentiating		.697*	.673
Formative Assessing			.706

*Correlation is significant at the 0.05 level (2-tailed).

The Cronbach alphas for the three constructs were acceptable as they were higher than 0.6 (Johns, 2010). The correlations between the constructs were positive and significant. The pilot study provided an opportunity to review the survey and make adjustments where needed to improve the current study.

Current Study

Participants for Current Study

The participants for this study were 104 elementary and secondary preservice teachers enrolled in undergraduate teacher education programs, who had just completed their student teaching semester. The preservice teachers represented three Upper Plains universities during fall semester of 2011. Of the 104 participating preservice teachers, 39 were male and 65 were female; 73 preservice teachers ranged in age from 21 to 24 years, and 27 preservice teachers were 25 years or older. Four participants did not include their age on the survey. Table 2 includes demographic information regarding numbers of practica, courses, and if RTI was in the student teaching placement.

Table 2. Demographic Information.

	F	%
Gender:		
Male	39	37.5
Female	65	62.5
Age:		
21-24	73	70.2
25 and older	27	26.0
no response	4	
Number of Practica:		
0-3	41	39.4
4-6	59	56.7
7-10	3	2.9
no response	1	
Number of Intro to Education classes:		
0-3	95	91.3
4-6	3	2.9
7-10	2	1.9
11 or more	1	1.0
no response	3	
Number of Methods classes:		
0-3	44	42.3
4-6	28	26.9
7-10	28	26.9
no response	4	
Number of Special Education classes:		
0-3	90	86.5
4-6	5	4.8
7-10	4	3.8
11 or more	2	1.9
no response	3	
Number of Assessment classes		
0-3	93	89.4
4-6	3	2.9
no response	8	
Number of Developmental classes:		
0-3	87	83.7
4-6	8	7.7
7-10	1	1.0
no response	8	
Was RTI in student teaching placement		
Yes	58	55.8
No	35	33.7
no response	11	

The three Upper Plains universities were chosen, because either my adviser or I knew a contact person in the Education departments at each of these institutions. Once I was given verbal agreement by the contact person, I then contacted the Institutional Review Boards of each of the three universities and completed their forms and provided a copy of the survey and a copy of the informed consent script that I planned to read to the potential participants. The informed consent script was the same one used for the pilot study and is found in Appendix A. When I read the informed consent script to the preservice teachers, I stated that they did not have to participate and no consequences would follow if they chose to not participate. I also made copies of this script available for the preservice teachers to take if they wanted. The script included my name and contact information if they had any questions. At one of the institutions, a faculty member read the script and distributed and collected the surveys, since I was collecting surveys at the same time at a different institution and was unavailable. I surveyed 104 participants from three universities on November 29, 2011 and November 30, 2011.

Instrument for Current Study

Some changes were made from the pilot survey to the current survey (see Appendix C for the current study survey). After reviewing the results of the pilot survey, revisiting the literature and meeting with my dissertation committee, the following adjustments were made to the pilot survey for this current study: the questions about knowledge of RTI were switched from yes/no responses to Likert-type responses, and the statement “I believe” was added preceding all the questions for scaffolding, differentiating, and formative assessing. In addition, several more independent variables were added such as number of introduction to education courses, number of methods

courses, number of special education courses, number of assessment courses, number of developmental courses, and a yes/no question asking if RTI was used in the student teaching placement school. A revised construct map was also created. Figure 2 illustrates the construct map for the current study.

In addition to these changes the committee also suggested adding open-ended questions to the end of the survey. These were included to gather additional information that might not be captured from the rest of the survey (Creswell, 2008). As a result, the following four additional questions were added to the survey:

What are your experiences with teaching exceptional children in the general education classroom?

What more would you like to share that was not on the survey or might be helpful to the researcher regarding Response to Intervention?

In your education course work, what did you learn about Response to Intervention?

In study teaching what did you learn about Response to Intervention?

The current instrument retained the demographic questions from the pilot that included gender, age and number of practica. The next section of the survey included a 15 item Likert-type scale that had six response choices to the statements: Strongly Agree, Agree, Somewhat Agree, Somewhat Disagree, Disagree, and Strongly Disagree regarding their perceptions of knowledge of RTI, their perceptions of scaffolding, differentiating instruction and formative assessing. In addition to those changes, the phrase “I believe” was added to all 15 of the Likert-type questions since that phrase fits with the purpose of the study which was to learn about preservice teachers’ perceptions (see Appendix C).

CONSTRUCTS FOR RESEARCH PROJECT

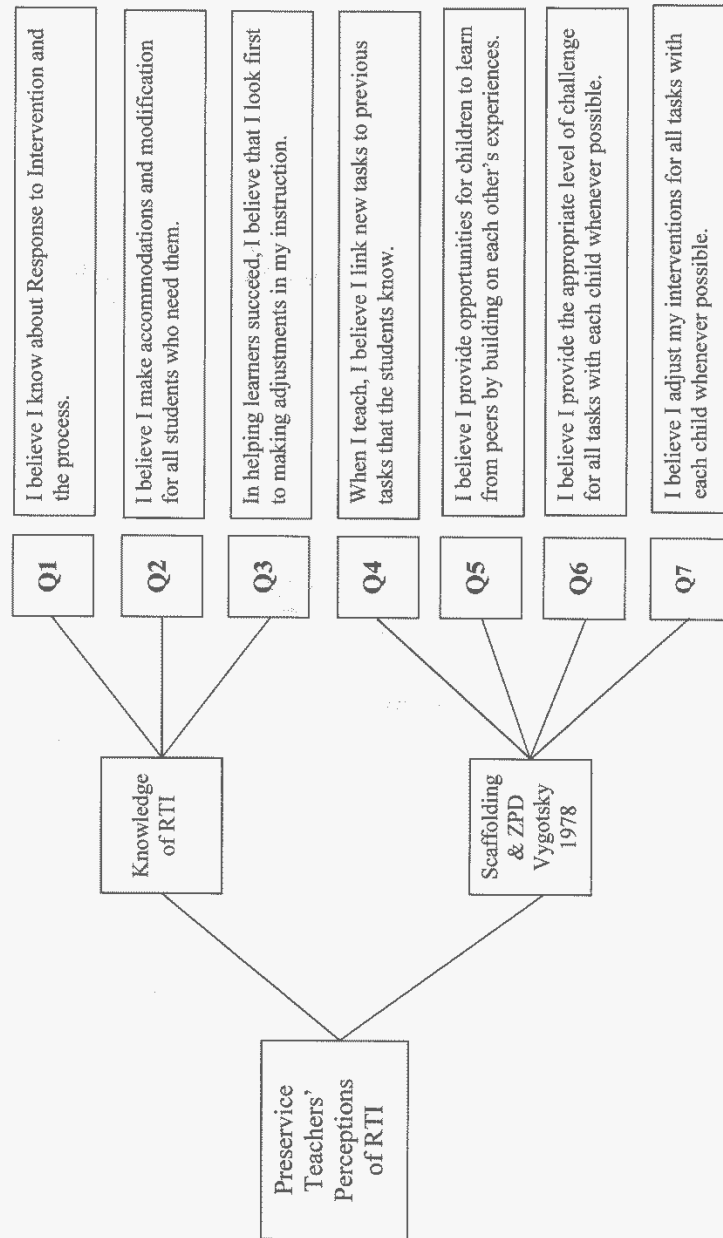
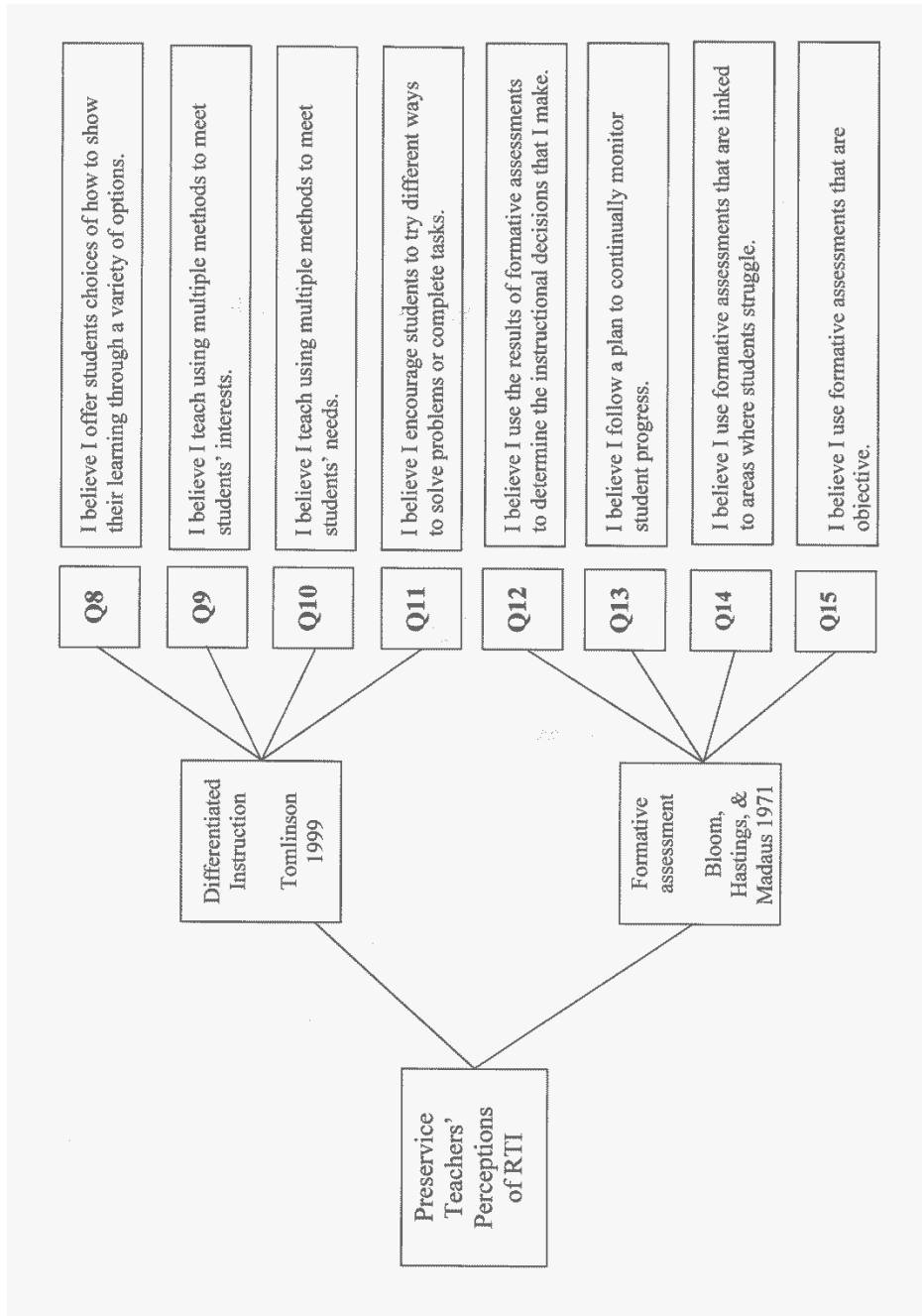


Figure 2. Construct map: Current study.

Figure 2 cont.



I also used Cronbach alpha in the current study to check for the reliability coefficients for each of the four constructs, knowledge of RTI, scaffolding, differentiating and formative assessing. The alpha for knowledge was adequate at .533. The alphas for scaffolding, differentiating and formative assessing were in the acceptable range, of .60 to .70 with assessment being slightly higher than .70. This information is illustrated in Table 3.

Table 3. Correlation of Subscale Constructs and Measures of Internal Consistency for the Current Study.

Construct	Scaffolding	Differentiating	Formative Assessing	Cronbach Alpha
Knowledge	.471*	.430*	.300*	.533
Scaffolding		.537*	.550*	.665
Differentiating			.274*	.693
Formative Assessing				.789

*Correlation is significant at the 0.05 level (2-tailed).

The internal consistency was strong for knowledge and scaffolding. There was not a significant correlation between differentiating and formative assessing constructs.

Data Entry

The data was entered into an Excel table. For gender, a one was entered if the participant checked male, and a two was entered if the participant checked female. With regard to age, a number one was entered for ages ranging from 21-24 years old and a number two was entered for ages 25 or more. Four participants did not write their age, so this was left blank in the Excel data. For the number of practica, the number of

Introduction to Education classes, the number of methods classes, the number of special education classes, the number of assessment classes and the number of development classes, a number one was entered for 0-3 classes or practica. The number two was entered for 4-6 classes or practica. The three was entered for 7-10 classes or practica, and the number 4 was entered for 11 or more classes or practica. For the question “was RTI in the student teaching placement” if yes was checked, the number one was entered. If no was checked the number two was entered.

For the section of the survey asking about the numbers of different types of courses, seven preservice teachers each entered the number range (2-3) instead of a single number when they answered how many courses they took. In all seven instances, I entered the number one as that represents the range 0-3. Two preservice teachers answered “all” for the number of introduction to education courses. In these two instances, the researcher kept this blank since there was no way to know what number “all” represented. One preservice teacher answered “minor” for how many special education courses taken. To find out how many special education courses equaled a “minor,” I researched the web sites for the three upper plains institutions that participated in this study on May 23, 2012. One of the three institutions did not offer a special education major, of the other two, only one listed the number of courses required for a minor, six. I entered the number two for the preservice teacher who chose “minor” for the number of special education courses because the number two represented the range of 4-6. One preservice teacher circled the line between choices 3 and 4 for questions 12, 13, and 14. Choice 3 was “slightly disagree” and choice 4 was “slightly agree”. Since this occurred on only one survey, I left these three responses blank. Some preservice teachers

entered zero for the different number of courses. In these instances, zero was entered into the data sheet. If preservice teachers left one of the questions blank, then it was left blank.

Design and Data Analysis

The current study was quasi experimental since participants were not randomly chosen. The participants were preservice teachers, and the survey represented their perceptions at the time it was taken. For analysis of the findings, I included the means and the standard deviation for each of the 15 Likert-type questions. I also included a table with the percent of some form of disagreement and some of agreement to show the slight variations that occurred.

In addition to these analyses, I examined data using ANOVA to compare the variables of the number of practica, the number of methods courses, number of special education courses, number of assessment courses, and if RTI was used in the student teaching placement, to the constructs of knowledge of RTI, scaffolding, differentiating, and formative assessing. I chose not to compare the variables of the number of introduction to education classes or the number of developmental classes, since several participants had questions regarding what was considered an introduction course and what was considered a developmental course.

I also examined the open-ended questions. The answers were read and coded for themes. After reading through the responses for the four questions, four themes emerged from the preservice teachers' answers: limited knowledge, valuable, effort and teacher education.

Biases

One of my biases for this study was that I felt more positive towards the RTI model than the discrepancy model, since I did not feel the latter met the needs of all learners. Part of this was due to the positive impact RTI and CBMs had on learning as represented in the literature. In addition, many of the practitioners that I worked with valued RTI and valued the flexibility of collaborating and meeting struggling students' needs without having to wait to provide services. This meant that I needed be careful not to let my positive view of RTI influence my reporting of the results, or any part of this process. I needed to present all the information about RTI relevant to this study in an objective manner, both the positive results from RTI studies and the controversies around RTI as well as the results of this study.

CHAPTER IV

RESULTS

The purpose of this study was to discover the perceptions of preservice teachers' knowledge and implementation of RTI. I was curious if the number of practica, or an increased amount of more specific courses such as methods classes, special education classes, or assessment classes, would change preservice teachers' perceptions of their knowledge and implementation of RTI. I was also curious if the perceptions of preservice teachers would be different if RTI was used by the cooperating teacher(s) in the student teaching placement school. The research questions were:

What perceptions do preservice teachers have regarding their knowledge of RTI?

What perceptions do preservice teachers have regarding scaffolding their instruction?

What perceptions do preservice teachers have regarding differentiating their instruction?

What perceptions do preservice teachers have regarding formatively assessing student learning?

The response rate for this study was 100% across all three institutions in that every preservice teacher that came to class that day participated. The 104 preservice teachers in attendance at the three different institutions completed the survey. In this chapter, I included an explanation of the statistical analyses that were done. This

included mean scores for each of the 15 Likert-type questions, and the percentages of some form of disagreement and agreement for each of the 15 Likert-type questions to illustrate the variations and provide more information. Also included are the results of the mean scores for the constructs of knowledge, scaffolding, differentiating, and formative assessing by the numbers of practica and numbers of different classes taken. Finally, I thematically presented the preservice teachers' responses to the open-ended questions that were on the survey.

Analysis

SPSS was used for all statistical analyses. To show the preservice teachers' responses to each of the 15 Likert-type questions, the means scores and standard deviations were calculated. The results are included in Table 4.

In Table 4, the highest mean value was question number 4 in the scaffolding construct at 5.2, indicating that most preservice teachers agreed that they linked new tasks to previous tasks. The next highest means were in differentiating instruction in questions 9, 10, and 11 with mean scores of 5.0 for each, indicating that most preservice teachers agreed that they used multiple methods in their teaching to meet students' interests and needs as well as encouraged student to try different methods to solve problems. The lowest mean was in knowledge question number one at 3.9, indicating that most preservice teachers slightly disagreed that they knew about RTI and the process.

Although Table 4 illustrates that preservice teachers had an average of some form of agreement to almost all of the Likert-type questions, except for question number one of knowledge, preservice teachers did have some disagreement. Table 5 illustrates the

Table 4. Mean Scores and Standard Deviations for the 15 Questions on the Survey (1=Strongly Disagree, 6=Strongly Agree).

Constructs		M	Std
Knowledge of RTI			
q1.	I believe I know about Response to Intervention and the process.	3.9	1.32
q2.	I believe I make accommodations and modifications for all students who need them.	4.9	.77
q3.	In helping students succeed, I look first to making adjustments in my instruction.	4.7	.83
Scaffolding			
q4.	When I teach, I believe I link new tasks to previous tasks that the students know.	5.2	.62
q5.	I believe I provide opportunities for children to learn from peers by building on each other's experiences.	4.9	.82
q6.	I believe I provide the appropriate level of challenge for all tasks with each child whenever possible.	4.6	.75
q7.	I believe I adjust my interventions for all tasks with each child whenever possible.	4.5	.85
Differentiating			
q8.	I believe I offer students choices of how to show their learning through a variety of options.	4.6	.94
q9.	I believe I teach using multiple methods to meet students' interests.	5.0	.84
q10.	I believe I teach using multiple methods to meet students' needs .	5.0	.73
q11.	I believe I encourage students to try different ways to solve problems or complete tasks	5.0	.73
Formative Assessing			
q12.	I believe I use the results of formative assessments to evaluate and determine the instructional decisions that I make.	4.8	.82
q13.	I believe I follow a plan to continually monitor students' progress.	4.7	.87
q14.	I believe I use formative assessments that are linked to areas where students struggle.	4.5	.84
q15.	I believe I use formative assessments that are objective.	4.6	.71

percentages of some form of disagreement, however small, and some form of agreement for the Likert-type questions.

For the 15 Likert-type questions in Table 5, the highest percentage of agreement was for question four in the scaffolding construct at 100% and question 11 in the differentiating construct at 99% agreement. The next highest percent of agreement was for question 10 in the differentiating construct at 98% agreement. These results indicated that preservice teachers agreed that they linked new tasks to old tasks, encouraged students to try different ways to solve problems, and taught using multiple methods to meet students' needs.

The highest percentage of disagreement was for question 1, as stated earlier, in the knowledge construct indicating 28.8% of preservice teachers disagreed that they knew about RTI and the process. The next highest percentage of disagreement was for question eight in the differentiating construct. The result indicated 10.6% of the preservice teachers did not believe that they offered students choices of how to show their learning through a variety of options. Question 7 in the scaffolding construct, and question 14 in the formative assessing construct were near 10% in disagreement as well. The results here indicated that for adjusting interventions for all tasks with each child and using formative assessments that are linked to areas where students struggle, 9.6 percent of the preservice teachers disagreed that they perceived they did these two things in their teaching.

Tables 6 through 10 illustrate mean scores using a one-way ANOVA. One-way ANOVA was used to compare the mean scores of the constructs of knowledge, scaffolding, differentiating, and formative assessing, demonstrated by the number of

Table 5. Percentages of Some Form of Disagreement and Some Form of Agreement for Survey Questions 1-15 (1=Strongly Disagree, 6=Strongly Agree).

Constructs		% of some form of Disagreement	% of some form of Agreement
Knowledge of RTI			
q1.	I believe I know about Response to Intervention and the process.	28.8	70.2
q2.	I believe I make accommodations and modifications for all students who need them.	4.8	95.1
q3.	In helping students succeed, I believe I look first to making adjustments in my instruction.	4.8	95.1
Scaffolding			
q4.	When I teach, I believe I link new tasks to previous tasks that the students know.	0.0	100.0
q5.	I believe I provide opportunities for children to learn from peers by building on each other's experiences.	4.8	95.1
q6.	I believe I provide the appropriate level of challenge for all tasks with each child whenever possible.	7.7	92.3
q7.	I believe I adjust my interventions for all tasks with each child whenever possible.	9.6	88.4
Differentiating			
q8.	I believe I offer students choices of how to show their learning through a variety of options.	10.6	89.4
q9.	I believe I teach using multiple methods to meet students' interests.	5.8	94.2
q10.	I believe I teach using multiple methods to meet students' needs.	1.9	98.1
q11.	I believe I encourage students to try different ways to solve problems or complete tasks.	0.0	99.0
Assessing			
q12.	I believe I use the results of formative assessments to determine the instructional decisions that I make.	5.8	93.2
q13.	I believe I follow a plan to continually monitor students' progress.	8.6	90.4
q14.	I believe I use formative assessments that are linked to areas where students struggle.	9.6	88.4
q15.	I believe I use formative assessments that are objective.	2.9	80.0

practica, the number of methods classes, the number of special education classes, the number of assessment classes, and whether or not RTI was in the student teaching placement. The degrees of freedom will change because one-way ANOVA was used. I chose not to compare the variables of the number of introduction to education classes or the number of developmental classes by the constructs, since several participants had questions regarding what was considered an introduction class and what was considered a developmental class. Each table includes the mean scores and standard deviations for the four constructs in relation to the number of practica, the number of methods classes, the number of special education classes, the number of assessment classes, and if RTI was in the student teaching placement.

Table 6 includes a comparison the constructs of knowledge of RTI, scaffolding, differentiating, and formative assessment by the number of practica.

Table 6. Univariate Analysis of Constructs According to Number of Practica.

Construct Category	0-3		4-6		7-10		<i>p</i>
	M	SD	M	SD	M	SD	
Knowledge	13.12	2.00	13.94	2.26	15.66	.57	.050
Scaffolding	19.12	2.17	19.64	2.21	19.00	1.00	.493
Differentiating	19.82	2.53	20.06	2.21	20.00	3.46	.883
Formative Assessment	19.29	2.75	18.20	2.41	18.50	2.12	.163

* $p < .05$

Constructs Relative to the Number of Practica

The mean of the practica group 0-3 to knowledge was similar to the practica 4-6 group. The mean was higher in knowledge of RTI for the 7-10 practica group, and the knowledge of RTI construct by the number of practica was not statistically significant ($F(2,99) = 3.087, p = .050$).

The means in scaffolding by the number of practica were not statistically significantly different in 0-3 practica, 4-6 practica, and 7-10 practica, and the scaffolding construct by the number of practica was not statistically significant ($F(2,98) = .713, p = .493$).

The means in differentiating by the number of practica also were not significantly different in 0-3 practica, 4-6 practica, and 7-10 practica, and the differentiating construct by the number of practica was not statistically significant ($F(2,99) = .125, p = .883$).

While the mean of formative assessment by 0-3 practica was slightly higher than the means of 4-6 practica, and 7-10 practica ($M = 18.50, SD = 2.12$), the construct of formative assessment by number of practica was not statistically significant ($F(2, 81) = 1.855, p = .163$).

Table 7 includes a comparison of the constructs of knowledge of RTI, scaffolding, differentiating, and formative assessing by the number of methods classes.

Constructs Relative to the Number of Methods Classes

The 0-3 methods classes mean to knowledge was similar to the methods 4-6 classes. The mean was slightly higher in knowledge of RTI for the 7-10 methods classes, but the knowledge construct by the number of methods classes was not statistically significant $F(2, 96) = 1.241, p = .294$.

Table 7. Univariate Analysis of Constructs According to Number of Methods Classes.

Construct Category	0-3		4-6		7-10		<i>p</i>
	M	SD	M	SD	M	SD	
Knowledge	13.31	2.33	13.88	2.53	14.10	1.54	.294
Scaffolding	19.51	2.19	19.55	2.25	19.17	2.24	.779
Differentiating	19.90	2.48	20.60	2.42	19.67	1.98	.297
Formative Assessment	18.75	2.57	18.91	2.84	18.28	2.57	.716

* $p < .05$

The means in scaffolding by the numbers of methods classes were not significantly different in 0-3 methods classes, 4-6 methods classes, and 7-10 methods classes, and the scaffolding construct by the number of methods classes was not statistically significant $F(2, 95) = .250, p = .779$.

The means in differentiating by the number of methods classes were also not significantly different in 0-3 methods classes, 4-6 methods classes, and 7-10 methods classes, and the differentiating construct by the number of methods classes was not statistically significant $F(2, 96) = 1.229, p = .297$.

The means of formative assessment by methods classes were also not statistically significantly different in 0-3 methods classes, 4-6 methods classes, and 7-10 methods classes, and the formative assessment construct by the number of methods classes was not statistically significant $F(2, 78) = .336, p = .716$.

Table 8 includes a comparison of the constructs of knowledge of RTI, scaffolding, differentiating and formative assessing by the number of special education classes.

Table 8. Univariate Analysis of Constructs According to Number of Special Education Classes.

Construct Category	0-3		4-6		7-10		11 or more		<i>p</i>
	M	SD	M	SD	M	SD	M	SD	
Knowledge	13.60	2.25	14.80	1.92	14.25	.50	14.50	2.12	.595
Scaffolding	19.28	2.21	20.80	2.28	20.75	1.25	19.50	2.12	.290
Differentiating	19.92	2.38	21.80	1.64	21.00	.81	18.50	.70	.202
Formative Assessment	18.50	2.66	20.20	1.30	19.50	.70	20.00	4.24	.445

* $p < .05$

Constructs Relative to the Number of Special Education Classes

While the means were slightly higher in Table 8 in knowledge of RTI in 4-6 special education classes, 7-10 special education classes, and 11 or more special education classes, than the means of 0-3 special education classes, the knowledge construct by the number of special education classes was not statistically significant $F(3, 96) = .634, p = .595$.

The means of scaffolding by the number special education classes 4-6, and special education classes 7-10 were slightly higher than scaffolding by special education classes 0-3 and special education classes 11 or more, but the scaffolding construct by the number of special education classes was not statistically significant $F(3, 95) = 1.266, p = .290$.

The means of differentiating by the number of special education classes 4-6 and special education classes 7-10 were slightly higher than the means of differentiating by the number of special education classes 0-3 and special education classes 11 or more, but

the differentiating construct by the number of special education classes was not statistically significant $F(3, 96) = 1.567, p = .202$.

The means of formative assessment by the number of special education classes 4-6, and special education classes 11 or more were slightly higher than the means of formative assessing by the number of special education classes 0-3, and special education classes 7-10, but the formative assessment construct by the number of special education classes was not statistically significant $F(3, 78) = .901, p = .445$.

Table 9 includes a comparison of the constructs of knowledge of RTI, scaffolding, differentiating, and formative assessing by the number of assessment classes.

Table 9. Univariate Analysis of Constructs According to Assessment Classes.

Construct Category	0-3		4-6		<i>p</i>
	M	SD	M	SD	
Knowledge	13.65	2.17	14.66	2.88	.432
Scaffolding	19.26	2.12	22.33	1.52	.015*
Differentiating	19.92	2.34	22.00	2.64	.137
Formative Assessment	18.52	2.58	21.66	1.15	.040*

* $p < .05$

Constructs Relative to the Number of Assessment Classes

In Table 9, the means of knowledge by assessment classes 4-6 was slightly higher than knowledge by assessment classes 0-3, but the knowledge construct by the number of assessment classes was not statistically significant $F(1, 93) = .624, p = .432$.

The mean of scaffolding, however, by number of assessment classes 4-6 was higher than scaffolding by assessment classes 0-3, and the scaffolding construct by the number of assessment classes was statistically significant $F(1, 92) = 6.135, p = .015$.

The mean of differentiating by assessment classes 4-6 was slightly higher than mean of differentiating by assessment classes 0-3, but the differentiating construct by the number of assessment classes was not statistically significant $F(1, 93) = 2.255, p = .137$.

Lastly, the mean score of formative assessment by the number of assessment classes 4-6 was higher than the mean of formative assessment by assessment classes 0-3, and the formative assessment construct by the number of assessment classes was statistically significant $F(1, 76) = 4.364, p = .040$.

Table 10 includes a comparison of the constructs of knowledge of RTI, scaffolding, differentiating, and formative assessing by whether or not RTI was in the student teaching placement.

Constructs Relative to RTI in the Student Teaching Placement

In Table 10 the mean score of knowledge by “yes, RTI was in the student teaching placement” was higher than the mean score of knowledge by “no, RTI was not in the student teaching placement,” and the knowledge construct by whether or not RTI was in the student teaching placement was statistically significant $F(1, 90) = 10.821, p = .001$.

The mean score of scaffolding by “yes, RTI was in the student teaching placement” was similar to the means of scaffolding by “no, RTI was not in the student teaching placement,” and the scaffolding construct by whether or not RTI was in the student teaching placement was not statistically significant $F(1, 89) = .942, p = .334$.

Table 10. Univariate Analysis of Constructs According to RTI in Student Teaching Placement.

Construct Category	Yes		No		<i>p</i>
	M	SD	M	SD	
Knowledge	14.24	2.02	12.76	2.16	.001*
Scaffolding	19.49	2.29	19.02	2.02	.334
Differentiating	20.15	2.39	19.62	2.31	.300
Formative Assessment	18.69	2.51	18.58	3.02	.866

* $p < .05$

The mean score of differentiating by “yes, RTI was taught in the student teaching placement” was slightly higher than the means of differentiating by “no, RTI was not in the student teaching placement,” but the differentiating construct by whether or not RTI was in the student teaching placement was not statistically significant $F(1, 90) = 1.085$, $p = .300$.

The means of formative assessment by “yes, RTI was in the student teaching placement” was similar to formative assessment by “no, RTI was not in the student teaching placement,” and the formative assessment construct by whether or not RTI was in the student teaching placement was not statistically significant $F(1, 73) = .029$, $p = .866$.

Open-ended Questions

The surveys also included four open-ended questions. All four of these questions dealt with RTI in some way. The first question was “What are your experiences with teaching exceptional children in the general education classroom?” Of the 104 preservice

teachers, 76 responded to this question. The second question was “What more would you like to share that was not on the survey or might be helpful to the researcher regarding Response to Intervention?” Of the 104 preservice teachers, 26 responded to this question. The third question was “In your education course work, what did you learn about Response to Intervention?” Of the 104 preservice teachers, 69 responded to this question. The fourth and final question was “In student teaching, what did you learn about Response to Intervention?” Of the 104 preservice teachers, 64 responded to this question. After reading through the responses for the four questions, four themes emerged from the preservice teachers’ answers: limited knowledge, valuable, effort, and teacher education.

Limited Knowledge

Preservice teachers overwhelmingly stated that they felt they had limited knowledge of RTI. These comments were throughout questions one through four. Preservice teachers stated, “not much,” “very little,” “not enough,” and “limited” regarding their knowledge of RTI. Some of these themes were connected to the statements that also mentioned the value of RTI.

Valuable

A theme that was often connected to limited knowledge was valuable. If preservice teachers made comments about its importance or value, they were placed in this category. Some of the preservice teachers’ comments were: “I wish I would have learned more,” “RTI strongly helps and saves those that need it,” “Positive way to help children,” “It is necessary,” and “RTI is necessary to assure student learning.”

Effort

Comments in the category of “effort” included preservice teachers’ statements regarding effort, challenge, and difficulty in the implementation process of RTI. The preservice teachers did agree regarding their attitude about the effort needed to implement RTI. Some of the comments that were negative regarding effort and RTI were: “My cooperating teacher says it’s a lot of work,” “It was used and some people did not like it,” “Seemed like this huge, difficult process of paperwork and extra work,” and “RTI is difficult to measure effectively.”

Some of the neutral or positive comments from preservice teachers categorized in effort were: “It takes a collective effort across the entire system to effectively make an intervention work,” RTI is not a large, intensive process,” “Documentation is key to monitor achievement,” and “A process that takes time and understanding.”

Teacher Education

The final category included comments related to RTI and teacher education. Many preservice teachers responded that they believed that their education programs should have taught more about RTI. The comments in this category included: “Addressed in only one course,” “More emphasis needs to be put on RTI and crisis management,” “Preservice teachers could use more education on RTI,” “Discuss more RTI – real cases, role play, etc.,” “More information in education classes,” “Having a class on campus to help with understanding it better,” and “RTI needs to be addressed more in the classroom.”

CHAPTER V
SUMMARY, DISCUSSION, CONCLUSIONS,
AND RECOMMENDATIONS

This chapter begins with a summary of the study. Then, a discussion of the findings is included, and a conclusion follows the discussion. This chapter ends with recommendations, which include teacher education recommendations and research recommendations including limitations of this study and future research.

The purpose of this study was to discover the perceptions of preservice teachers' knowledge and implementation of RTI. I was curious if the number of practica or specific courses (such as methods classes, special education classes, or assessment classes) would influence preservice teachers' perceptions of their knowledge and implementation of RTI. I was also curious if the perceptions of preservice teachers would be different if RTI was used in the student teaching placement school. The research questions were:

What perceptions do preservice teachers have regarding their knowledge of RTI?

What perceptions do preservice teachers have regarding scaffolding their instruction?

What perceptions do preservice teachers have regarding differentiating their instruction?

What perceptions do preservice teachers have regarding formatively assessing student learning?

The study included 104 elementary and secondary preservice teachers from three Upper Plains universities. Of the 104 preservice teachers, 39 were male and 65 were female. More than half of the participants (58) indicated on the survey that RTI was in the student teaching placement.

The responses to the 15 Likert-type survey questions were analyzed using one-way ANOVA to compare the constructs of knowledge of RTI, scaffolding, differentiating instruction, and formative assessment by the number of practica, methods courses, special education courses, assessment courses, and if RTI was in the student teaching placement. The results showed that the number of practica affected, but not significantly, the preservice teachers' perception of their knowledge of RTI; whether RTI was in the student teaching placement also affected, significantly, preservice teachers' perceptions of their knowledge of RTI. Preservice teachers' perceptions regarding scaffolding and formative assessment by the number of assessment classes were found to be statistically significant. On the open-ended questions, the preservice teachers responded that they felt RTI was important and should be included much more in their teaching courses, since they perceived they had limited knowledge of RTI. Preservice teachers also discussed the amount of effort involved to implement RTI, but there was disagreement about whether it was difficult for classroom teachers to implement.

This research indicates that teacher education programs need to incorporate RTI more in their courses and assignments. Preservice teachers should be learning about RTI in their classes and field experiences.

Discussion

Research Question One

What perceptions do preservice teachers have regarding their knowledge of RTI? Researchers Wold (2009) and Perry (2012) noted that inservice teachers need more training in RTI, because the teacher participants in their studies felt they did not know enough about RTI. Similarly, this study confirms that perception, as participants indicated on the survey that they disagreed slightly in response to the first question “I believe I know about Response to Intervention.” On the open-ended questions the preservice teachers also indicated that they did not know much about RTI. Comments included such statements as: “not much,” “very little,” and “not enough” regarding their perception of their knowledge of RTI.

Researchers Wold (2009) and Perry (2012) also suggested that RTI needed to be included in teacher education programs. These results indicate that preservice teachers perceived that they were learning about RTI in their field experiences but not as much in their teacher education programs.

Wold (2009) and Perry (2012) argued that more training of RTI in teacher education programs was needed. The ANOVA results in this study illustrated that the knowledge construct by whether or not RTI was in the student teaching placement was statistically significant. This was further confirmed by the open-ended comments such as, “Preservice teachers could use more education on RTI,” and “RTI needs to be addressed more in the classroom.”

RTI has been shown to positively impact student learning (Tilly, 2003; Vellutino et al., 2006). The preservice teachers in this study seemed to agree. Preservice

teachers' comments in the open-ended section included statements such as: "RTI is necessary to assure student learning," "positive way to help children," and "RTI strongly helps, and saves those that need it."

Research Question Two

What perceptions do preservice teachers have regarding scaffolding their instruction? Scaffolding is critical to successful implementation of RTI (Hawkins et al., 2008; Reschley & Wood-Garnett, 2009). In this study overall, the majority of preservice teachers responded with some form of agreement to all four of the scaffolding questions. However, the last question ("I believe I adjust my interventions for all tasks with each child whenever possible") had 10% of disagreement.

Berk and Winsler (1995), Vaughn et al. (2008), and Vygotsky (1978) argued that scaffolding is important to meeting the learning needs of students. In the ANOVA results, scaffolding by the number of assessment classes was statistically significant. In addition, assessment classes seemed to have affected preservice teachers' perceptions of scaffolding instruction and formatively assessing student learning. Since scaffolding and formative assessment are important in the implementation of RTI, the assessment courses may be an area where teacher education can expand some of the RTI training.

Berk and Winsler (1975) argued that scaffolding ". . . keeps children in their ZPD . . . by structuring the task and the surrounding environment so that the demands on the child at any given time are at an appropriately challenging level, and constantly adjusting the amount of adult intervention to the child's current needs and abilities" (p. 29).

As assessment classes often include work on skills such as formative assessments, meeting students' ZPD and changing instruction to meet students' needs, the fact that

scaffolding in this study was statistically significant by the number of assessment classes taken makes sense.

Research Question Three

What perceptions do preservice teachers have regarding differentiating their instruction? Researchers point out that differentiating instruction is critical to successful implementation of RTI and is critical to supporting students in the classroom (Brozo, 2009; Case et al., 2003; Perry, 2012). Even though the preservice teachers responded with some form of agreement to all of these questions, the differentiating construct was not found significant when compared to any of the variables. The reason for this will be addressed in the limitations section.

When teachers differentiate, they offer students choices in the areas of content, process, and product (Heacox, 2002; Tomlinson, 1999). The results from this study revealed that the preservice teachers who participated perceived that they were differentiating instruction for their students.

Wormeli (2007) also pointed out that differentiating instruction requires teachers to "...adapt our instructional techniques to meet [students'] needs" (p. 9). The preservice teachers in this study perceived a high form of agreement on every DI question; yet, the DI construct was not statistically different when compared to any of the course or field experience variable. The reason for this will be addressed in the limitations section.

Research Question Four

What perceptions do preservice teachers have regarding formatively assessing student learning? Formative assessments and the implementation of them is also critical to successful implementation of RTI as it affects treatment integrity, the effort needed to

follow the set procedures and follow-through to ensure that RTI has been implemented as needed (Lane et al., 2004). The preservice teachers responded to these questions with some form of agreement.

Overall, the formative assessment construct was found significant when compared with the number of assessment classes. This fits with what was expected since assessment classes work on the skills related to assessing students' learning and making adjustments to instruction based on assessment results.

In an interview with Scherer (2012), Darling-Hammond argued that teacher education programs that are the strongest “enroll students in student teaching from the time they enter through the time they complete the program. Courses and student teaching are woven around each other, like a double helix” (p. 20). My findings also illustrate that these preservice teachers' perceptions were influenced by both practica and field experiences, suggesting that field experiences and course work are both critical to preservice teachers' knowledge and growth.

Conclusion

The perceptions of these preservice teachers' knowledge of RTI appeared to be affected by both the number of practica and RTI in the student teaching placement. These preservice teachers also felt that they needed to learn more about RTI in their teacher education classes. The perceptions of these preservice teachers of their scaffolding and formative assessment seemed to have been affected at the time by the number of assessment classes they took. The perceptions of these preservice teachers' differentiating instruction appeared not to be influenced by any of the variables of classes or field experiences.

Recommendations

Teacher Education Recommendations

With the reauthorization of NCLB (2004) many K-12 schools have adopted RTI (Bradley et al., 2011). Teacher education programs have begun to respond by including RTI in their courses, but there are challenges to implementing RTI. One challenge is that there is little research regarding RTI and preservice teachers. Teacher educators need to begin making curriculum adjustments, but what is the best way to do that? In addition to lack of research and needed curriculum adjustments, teacher education programs also face challenges in field placements since not all K-12 schools have adopted RTI, or have only just begun to implement RTI (Hawkins et al., 2008).

Due to challenges that do exist, implementing RTI successfully must be accomplished with several aspects in mind. Teacher education faculty need to stay up to date with research in RTI (Wold, 2009). This will mean reviewing existing studies on preservice teachers' experience with RTI. Also, teacher educators should be aware of inservice teachers' professional development related to RTI and its implementation in K-12 education.

Teacher preparation should include information about RTI (Wold, 2009), but that alone will not be enough. Field placements that link the teacher education courses and assignments to field placements where preservice teachers practice the skills are ideal. In field placements where RTI is implemented, preservice teachers have opportunities to develop formative assessments, review the results, and adjust teaching strategies. Preservice teachers would also have opportunities to differentiate instruction and scaffold learning to help students succeed. In field placements where RTI is incorporated,

preservice teachers would need to collaborate with other professionals in serving their students. These skills are critical and would connect their teacher education coursework to the work they do in the field. However, when field placements do not incorporate RTI, teacher education programs can provide opportunities for preservice teachers to analyze what a student or students need to learn through the use of case studies. Case studies provide preservice teachers opportunities to "...be diagnosticians and planners" (Darling-Hammond, 1999/2008, p. 334). The case studies will give preservice teachers opportunities to further study situations where they need to reflect, problem-solve, communicate.

Preservice teachers also need to be able to use a variety of teaching strategies to meet all students' needs (Darling-Hammond, 1999/2008; Donovan & Cross, 2002). Case studies are one way teacher education programs can provide preservice teachers with practice at implementing RTI skills. Peer teaching, within the teacher education program, is also recommended for the development of knowledge and skills related to scaffolding, assessment, and differentiated instruction (Darling-Hammond, 1999/2008).

Teacher education faculty should also model teaching strategies to the preservice teachers in their courses (Zeichner & Conklin, 2008). These strategies could include differentiating instruction by providing preservice teachers with choices and scaffolding instruction since these skills are important in implementing RTI (Burns & Gibbons, 2008; Brozo, 2009). Preservice teachers also need to be prepared to teach children from a variety of cultural backgrounds and abilities (Darling-Hammond, 1999/2008; Donovan & Cross, 2002). Having faculty model a variety of teaching strategies, as well as providing preservice teachers with opportunities to implement these strategies with their peers and

in their field placements might provide preservice teachers with the knowledge and implementation skills for RTI.

Opportunities for collaboration are also critical to implementing RTI (Allen & Blackstone, 2003). Preservice teachers need to work with a variety of professionals when serving all students' needs (Allen & Blackstone, 2003). Teacher education programs have the challenge here of helping preservice teachers develop in ways where they are comfortable asking and seeking information from a variety of people and working together with people to support all students and their learning (Allen & Blackstone, 2003; Darling-Hammond, 1999/2008; Donovan & Cross, 2002). Teacher education programs can encourage preservice teachers to meet with all service providers in their field placements, and work cooperatively with their peers in research and inquiry projects. Teacher education programs can also work closely with the partner schools that provide that field placements and discuss goals, concerns, and opportunities that will promote collaborative experiences for the inservice and preservice teachers.

Ensuring that preservice teachers are prepared to meet students' learning needs will require teacher education programs to implement RTI into preparatory courses and related field experiences and to assess whether preservice teachers can meet the needs of their learners during their field and practica experiences. Educators must be prepared to provide the means for all children to learn. That responsibility is number one.

Research

Limitations. As I reflect about this study, I see a missed opportunity. To better capture the differentiating instruction construct, I would change the questions to include

content, process, and product (Tomlinson, 1999). In this way, the construct would have been more accurate and may have had significance when compared with the variables.

Another limitation is that this study only included three convenience sample universities. More participants across more universities may have shown different results. In addition, one of the participating universities did not want to have the results disaggregated, because they did not want any chance of being identified in this study. This restricted my ability to report on individual results.

The fact that “developmental” and “introduction to education” classes were confusing terms for the preservice teachers are also limitations to this study. The phrase “developmental” should be replaced with, for example, “Education Psychology, Child Development, or Adolescent Development.” For the introduction to education classes, I am not sure that I would include this variable again as RTI may only be mentioned but not emphasized much in these types of courses.

Future Research. More studies need to be done to understand preservice teachers’ perceptions of their knowledge and implementation of RTI. This study refers to preservice teachers perceptions after student teaching.

A follow up study that includes interviews of preservice teachers after student teaching, and the cooperating inservice teachers who are paired with the preservice teachers, may further capture and explain the results of this study. Would other constructs emerge from the interviews? This question should be explored.

This was a one-time survey. A pre-post study that surveys preservice teachers before student teaching, includes observations of preservice teacher teaching, collects artifacts, and then interviews preservice teachers after student teaching may reveal more

information about their perceptions and further reveal the preservice teachers' perceptions of their knowledge and implementation of RTI.

More studies of RTI and preservice teachers are needed to help inform teacher education programs and best serve *all* students.

APPENDICES

Appendix A Consent Script

Preservice Teachers' Perceptions of their Knowledge and Application of Response to Intervention

You are invited to be in a research study of preservice teachers' and their instructional practices related to Response to Intervention. You were selected as a possible participant because you are pursuing a teaching degree and you are completing or just completed student teaching.

This study is being conducted by Carrie Jepma through the University of North Dakota

Procedures:

If you agree to be in this study, I ask that you would do the following things: Fill out the survey regarding your teaching practices in student teaching. The survey should take about 10 minutes.

Confidentiality:

The records of this study will be kept private. In any sort of report that I might publish, I will not include any information that will make it possible to identify a subject or institution. Research records will be stored securely, and only I will have access to the records.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of North Dakota or Carrie Jepma. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Carrie Jepma. You may ask any question you have now. If you have questions later, you are encouraged to contact me at 320-760-6420, jepma004@morris.umn.edu, or Margaret Zidon, advisor at the University of North Dakota, 701-777-3614; Margaret.zidon@email.und.edu

You are free to take a copy of this information to keep for your records

Appendix B Survey – Pilot Study

RTI and Preservice Teachers Survey

Please take a moment to fill out the survey below. The purpose of this survey is to assess knowledge and skills related to Response to Intervention.

Gender <input type="checkbox"/> Male <input type="checkbox"/> Female	Age _____ Number of Practicums _____ Years in College _____
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1.	I am familiar with modifications and accommodations.	Y	N
2.	I am familiar with positive behavioral interventions.	Y	N
3.	I am familiar with formative and summative assessments and their uses in the classroom.	Y	N

Please think of the following questions in the context of skills and knowledge for teaching exceptional children.		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
4.	When I teach, I link new tasks to previous tasks that the students know.	1	2	3	4	5	6
5.	I provide opportunities for children to learn from peers by building on each other's experiences.	1	2	3	4	5	6
6.	I provide the appropriate level of challenge for all tasks with each child whenever possible.	1	2	3	4	5	6
7.	I adjust my interventions for all tasks with each child whenever possible.	1	2	3	4	5	6
8.	I offer students choices of how to show their learning through a variety of options during my field experience/s.	1	2	3	4	5	6
9.	I teach using multiple methods to meet learners' interests during my field experience/s.	1	2	3	4	5	6
10.	I teach using multiple methods to meet learners' needs during my field experience/s.	1	2	3	4	5	6
11.	I encourage students to try different ways to solve problems or complete tasks in my field experience/s.	1	2	3	4	5	6
12.	I use the results of formative assessments to determine the instructional decisions that I make.	1	2	3	4	5	6
13.	I follow a plan to continually monitor student progress.	1	2	3	4	5	6
14.	I use formative assessments that are linked to areas where students struggle.	1	2	3	4	5	6
15.	I use formative assessments that are objective.	1	2	3	4	5	6

Appendix C Survey – Current Study

Response to Intervention and Preservice Teachers Survey

Please take a moment to fill out the survey below. The purpose of this survey is to assess knowledge and skills related to Response to Intervention.

Gender <input type="checkbox"/> Male <input type="checkbox"/> Female Age _____	Number of Practica _____ Number of intro to Education courses _____ Number of methods courses _____ Number of special education courses _____ Number of assessment courses _____ Number of developmental courses _____ Was RTI used in the student teaching placement school? <input type="checkbox"/> yes <input type="checkbox"/> no
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Please think of the following questions in the context of skills and knowledge for teaching exceptional children.		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1.	I believe I know about Response to Intervention and the process.	1	2	3	4	5	6
2.	I believe I make accommodations and modifications for all students who need them.	1	2	3	4	5	6
3.	In helping learners succeed, I believe that I look first to making adjustments in my instruction.	1	2	3	4	5	6
4.	When I teach, I believe I link new tasks to previous tasks that the students know.	1	2	3	4	5	6
5.	I believe I provide opportunities for children to learn from peers by building on each other's experiences.	1	2	3	4	5	6
6.	I believe I provide the appropriate level of challenge for all tasks with each child whenever possible.	1	2	3	4	5	6
7.	I believe I adjust my interventions for all tasks with each child whenever possible.	1	2	3	4	5	6
8.	I believe I offer students choices of how to show their learning through a variety of options.	1	2	3	4	5	6
9.	I believe I teach using multiple methods to meet students' interests.	1	2	3	4	5	6
10.	I believe I teach using multiple methods to meet students' needs.	1	2	3	4	5	6
11.	I believe I encourage students to try different ways to solve problems or complete tasks.	1	2	3	4	5	6
12.	I believe I use the results of formative assessments to determine the instructional decisions that I make.	1	2	3	4	5	6
13.	I believe I follow a plan to continually monitor student progress.	1	2	3	4	5	6
14.	I believe I use formative assessments that are linked to areas where students struggle.	1	2	3	4	5	6

15.	I believe I use formative assessments that are objective.	1	2	3	4	5	6
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1. What are your experiences with teaching exceptional children in the general education classroom?
2. What more would you like to share that was not on the survey or might be helpful to the researcher regarding Response to Intervention?
3. In your education course work, what did you learn about Response to Intervention?
4. In student teaching what did you learn about Response to Intervention?

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