Elementary Preservice Teachers' Experiences with Response to Intervention

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In today's public schools, general education teachers must be adequately prepared to teach students with multiple learning needs, including students who do not speak English, who have identified or suspected disabilities, and/or who have diverse cultural and racial backgrounds. The enactment of No Child Left Behind in 2001 (NCLB) and the reauthorization of the Individuals With Disabilities Education Improvement Act of 2004 (IDEA) placed an emphasis on providing research-based instructional practices in the general education classroom before an at-risk student can be considered for placement in special education. It is vital that general education teachers are prepared to work with this diversity in classrooms, including strategies to work with students who are at risk for developing learning difficulties or who may already have a disability.

Response to intervention (RTI) is a general education intervention system used by classroom teachers to assist struggling learners and provide individualized, academic support to help all students succeed academically (D. Fuchs & Fuchs, 2006). This process is also vital as a prereferral process as a prerequisite

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to special education referrals and eligibility determination (Fletcher & Vaughn, 2009). Schools must consider important legal ramifications in regard to special education identification and eligibility. Identification and prereferral processes are the responsibility of the general education teacher as the first point of contact with a student who struggles academically or behaviorally (Fletcher & Vaughn, 2009; Mastropieri & Scruggs, 2005).

Response to Intervention in Practice

RTI has been widely studied as an evidence-based intervention process used to assist struggling learners in the classroom or to identify students as having a learning disability in either reading or math (Baker, Gersten, & Dae-Sik, 2002; Fuchs et al., 2005; Gersten et al., 2009; Scammacca et al., 2007; Wanzek & Vaughn, 2007). Recently, studies have also focused on campus and teacher RTI implementation in individual districts and schools, including many of the teacher concerns related to their development and practice of RTI in classroom settings (Greenfield, Rinaldi, Proctor, & Cardarelli, 2010; Orosco & Klingner, 2010; Rinaldi, Averill, & Stuart, 2011; Stuart, Rinaldi, & Higgins-Averill, 2011; Wilcox, Murakami-Ramalho, & Urick, 2013).

Preservice general education preparation is significant in predicting teachers' perceptions of working with students who have disabilities. Research has demonstrated that general education practitioners do not feel adequately prepared to work with students who have disabilities or with students in inclusion settings (Conderman & Johnston-Rodriguez, 2009; Goodlad & Field, 1993). Special education preservice course work is connected with more positive attitudes among general educators toward teaching students who have learning disabilities (McCray & Alvarez-McHatton, 2011; McHatton & Parker, 2013). Studies linking preservice preparation to teachers' attitudes in working with students who have disabilities are an important predictor of positive instructional approaches related to mainstreaming and inclusion (Ajuwon et al., 2012; Hadadian & Chiang, 2007; Rademacher, Wilhelm, Hildreth, Bridges, & Cowart, 1998; Van Laarhoven, Munk, Lynch, Bosma, & Rouse, 2007; Voss & Bufkin, 2011). Research has also connected teacher confidence and self-efficacy with preservice course work and field experiences in special education issues (Atiles, Jones, & Kim, 2012; Brownell & Pajares, 1999; Gao & Mager, 2011; Lancaster & Bain, 2010). Related to the context of RTI, these studies are vital for consideration, because RTI and special education are inextricably linked through general education support strategies for struggling learners.

Successful RTI implementation is dependent on a teacher's preparation and development to implement the dynamic relationship of student assessment, intervention, monitoring, and decision making. RTI practices, similar to the nature of other school reform concerns, require significant change on many levels, including changes in teaching practices (Nunn & Jantz, 2009). The RTI model proposes a fundamental paradigm shift in the way that schools identify and serve students who

struggle with the general education curriculum. The level of specialized, hierarchical academic support provided to students requires a set of knowledge and skills from the general education practitioner that was not previously required. This paradigm shift has important implications for preservice teacher (PST) preparation programs (Richards, Pavri, Golez, Canges, & Murphy, 2007).

Response to Intervention and Preservice Teacher Preparation

The challenges of RTI implementation are present in teacher preparation programs (L. S. Fuchs & Fuchs, 2006; Nunn & Jantz, 2009; Richards et al., 2007). RTI is based on the premise that general educators will deliver evidence-based practices in the classroom setting (Danielson, Doolittle, & Bradley, 2007), and the training of PSTs helps build capacity for future implementation in the schools. Danielson et al. stated, "At this point, there has not been sufficient attention paid to the implications of RTI for the pre-service preparation of personnel who will play critical roles in implementation (i.e. principals, general education teachers, [school] psychologists, and special educators)" (p. 633). Some evidence has suggested that if teachers receive preparation in RTI implementation at the preservice level, then they may implement interventions in the classroom with more integrity and less coaching (Begeny & Martens, 2006).

Researchers cite a growing need for embedded RTI practices within teacher preparation programs. According to a 2010 survey by the Florida Problem Solving/RTI Statewide Implementation Project, recent graduates indicated that teacher preparation programs needed to do more to expand the competencies and skills needed to work with struggling students in a problem-solving or RTI model (Prasse et al., 2012). Other studies have reported similar findings, with teachers citing a lack of basic knowledge needed to teach struggling students (Hoppey, 2013; Mather, Bos, & Babur, 2001). Although researchers often discuss the importance of preservice training, only a few studies have specifically investigated PST training and RTI practices.

Hawkins, Kroeger, Musti-Rao, Barnett, and Ward (2008) explored the outcome of training preservice special educators in RTI through targeted university course work and field-based experiences. The researchers found that effective RTI training models included several important components, such as interdisciplinary training in specific RTI prevention or Tier 1 practices, using assessment and progress monitoring data to make decisions, participating in team problem solving, and selecting effective research-based interventions appropriate for specific student needs. This study emphasized the significance and challenges of placing preservice professionals in field experiences that provide experiences in implementing an RTI program. Finding adequate settings and mentor teachers is a significant barrier for preparation programs wanting to simulate effective RTI experiences for their PSTs.

Grogg (2009) studied the relationship between training in prereferral intervention teams and PSTs' knowledge and perceptions of these practices. PSTs

who participated in prereferral training reported significant changes in knowledge about instructional interventions, including positive changes in perceptions of the assessment process, decision making based on the data, and responses to individual student needs. These increases in knowledge about the prereferral process only serve to build future capacity for responding to student instructional needs as part of an RTI process. Grogg attributed focused training in prereferral activities to the PSTs' ability to generalize this knowledge to future instructional settings.

McCombes-Tolis and Spear-Swerling (2011) conducted a review of elementary education course work syllabi to determine the extent of training in RTI practices for early reading intervention. The researchers discovered that elementary PSTs were not routinely receiving explicit instruction regarding key RTI terminology, theoretical models and best practices of RTI, and research-based reading interventions. This finding echoed sentiments expressed earlier by the National Reading Panel (2000) and Bos, Mather, Dickson, Podhajski, and Chard (2001). Furthermore, inadequacies in preparing PSTs to implement early reading interventions continue to be a concern (Otaiba, Lake, Greulich, Folsom, & Guidry, 2012).

Preservice special education teachers who participated in an online RTI training system known as the IDEA '04 and the Research for Inclusive Settings model were found to have significant positive changes in their reported knowledge about RTI as compared to pre- and postparticipation in the modules (Kuo, 2013). Furthermore, the modules were shown to increase background knowledge about RTI, although the sustainability of this knowledge in classroom settings remains unknown.

A study by Neal (2013) set out to discover general and SPED PSTs' perceptions of RTI and their perceived ability to implement an RTI program in future settings. Although most preservice participants perceived RTI as a necessary and crucial part of assisting struggling students, there was a significant difference among participants in the reported ability to implement RTI. SPED PSTs reported much higher levels of self-efficacy in implementing RTI, mainly due to differences in course work and fieldwork experiences compared to the general education program. A common theme seen among all participants in the study was the need for more training and hands-on experiences with implementing RTI in a school setting, suggesting that teacher preparation is a vital component of implementing an effective RTI program in future classroom settings.

In many of these studies, participants primarily included psychology students and special educators rather than general education preservice practitioners (Hawkins et al., 2008; Kuo, 2013; Neal, 2013). The encompassing RTI literature typically situates RTI as a general rather than special education intervention (Fletcher & Vaughn, 2009; Mastropieri & Scruggs, 2005). Overall, more information is needed about how university teaching programs prepare general educators to diagnose, intervene with, and monitor struggling students specific to the RTI framework established formally by NCLB and IDEA. This raised concerns in the extent that general education teachers use assessments, monitor progress, and make

sound educational decisions regarding struggling students. When considering the prominent role general educators play in the implementation of RTI, this is cause for concern (Neal, 2013).

Purpose and Research Question

Although the perceptions and experiences of PSTs are critical to the future success of RTI implementation, limited studies in teacher preparation have evaluated how preservice programs are preparing general education teachers to implement RTI as both a prevention model and an identification model in their future classrooms (Hoppey, 2013; Prasse et al., 2012). Hawkins et al. (2008) stated that "a specific literature review revealed no specific studies related to RTI pre-service training and outcomes" (p. 747). Since this statement, few studies have emerged that specifically examine RTI implementation within PST preparation programs (Grogg, 2009; Kuo, 2013; McCombes-Tolis & Spear-Swerling, 2011; Neal, 2013).

Recent emphasis on PST preparation methods and a focus on meeting the academic needs of a diverse student population in the general education classroom have revealed a need for more research in the practices of these programs (National Council on the Accreditation of Teacher Education, 2010; National Council on Teacher Quality, 2013; National Mathematics Advisory Panel, 2008; National Research Council, 2010). Of particular interest is the need to understand how elementary education (early childhood to sixth grade; EC–6) PSTs are prepared to include RTI practices in their classrooms and how these PSTs transfer their university preparation by applying the principles of RTI in their fieldwork experiences.

Research documents that there is an existing transfer problem in the realm of PST education (Korthagen & Kessels, 1999; Wubbels, Korthagen, & Brekelmans, 1997). A synthesis of the literature reveals several documented areas of concern regarding PST education and the transfer of knowledge and experience to actual teaching settings (Bransford & Schwartz, 1999; Stofflet & Stoddart, 1994; Wubbels, 1992). Research in teaching and learning has revealed that existing or prior knowledge has a major impact on comprehension and learning (Scardamalia & Bereiter, 1989).

The purpose of the study was to examine PSTs' understanding, practice, and generalization of RTI practices in a university mathematics methods course assignment that applies RTI methodology. The following research question guided this study: What are general education elementary PSTs' understandings and practice of RTI in a university mathematics methods course assignment (mathematics interactions project) that transfers RTI methodology to mathematics teaching practice?

Theoretical Framework

Educational experts have cited transfer of learning as one of the most problematic issues with learning in a classroom environment (Bevevino, Dengel, & Adams,

1999; Borich & Tombari, 1997; Rossett, 1997). Robert Haskell (2001) developed a theory of learning transfer by synthesizing years of research on transfer within learning contexts applicable to an educational framework. Haskell believed that the transfer of learning refers to application and acclimatization of previous learning to new contexts. Constructivist learning theory idealizes the notion that prior knowledge and experiences are essential for new learning to occur; the issue with transfer arises when new learning is applied to vastly different contexts.

Haskell posited that significant transfer could only occur when new learning transpired to produce the transfer. He suggested that near, far, and displacement or creative transfer were the highest levels to strive for and insisted that unless new learning occurred, the only thing that resulted was the application of the same learning rather than the transfer of new learning. Studies in transfer and generalization have corroborated this theory for meaningful transfer (Calais, 2006; Clark & Voogel, 1985; Comier & Hagman, 1987).

Haskell summarized 11 widely accepted educational principles that support transfer processes. These principles were the primary lens through which the data from this study were collected and analyzed to determine the level of transfer that occurred regarding RTI practices among the preservice participants. Transfer is a vital consideration as PSTs apply learning in course work and field-based experiences to the teaching profession. This is a complex process and requires careful, explicit educational opportunities designed to specifically facilitate transfer (Benander & Lightner, 2005). Additionally, Calais (2006) stated that educational learning must consider Haskell's levels to design opportunities for higher, more significant levels of transfer to occur. This study sought to identify the RTI knowledge that was gained through a teacher education preparation program, in particular, a mathematics interaction project (MIP) as part of the mathematics methods course, through the lens of Haskell's principles of transfer in order to deduce how PSTs transfer this learning to a field-based teaching context. In this study, two main principles were used to analyze the information, as the remaining nine principles were not seen:

> *Principle 1*. Learners need to acquire a large knowledge base in the areas in which transfer is to occur (Clark & Lampert, 1986; Korthagen & Kessels, 1999; Scardamalia & Bereiter, 1989; Tom, 1997). In other words, learners need an extensive knowledge base of RTI practices at the university program level to be able to transfer the knowledge into practice.

> *Principle 9*. Practice and drill are necessary for transfer (Engelmann, 1988; Rose & Church, 1998). Opportunities to practice implementing RTI practices with students or in a field-based setting are crucial for mastery learning.

Research Design

The research design followed a case study methodology. This study sought to explain PSTs' perceptions of RTI and gauge their ability to transfer this knowledge to classroom use through interviewing and extensive analysis of a course assignment given in the mathematics methods course, known as the MIP.

Undergraduate students working toward elementary teaching certification at a north Texas university were recruited as participants. PSTs choose from one of several routes to obtain certification from the university, including EC–6 Generalist or EC–6 with a specialization. The specialization areas included English as a second language (ESL), bilingual education, or special education (SPED). PSTs also participated in field-based experiences known as professional development schools (PDS) while taking methods classes at the university. During this phase, courses taught at the university are designed to interface theory and practice in the field. Assignments from courses align theories presented in class with field experience opportunities to test the theories with young learners. Approximately 85 PSTs were enrolled in PDS course work in the spring 2015 semester, from which 22 candidates consented to participate in the study. The participants included one bilingual candidate, six SPED candidates, and 15 ESL candidates across four sections of the mathematics methods courses.

Data Sources

The study employed two main data sources to determine the case for PSTs' perceptions of university mathematics methods course work in relation to RTI and their transfer of learned RTI practices during their PDS experience. Data were derived from document analysis of the PSTs' field-based assignment and focus group interviews during the first PDS semester.

The MIP was a required assignment as part of the mathematics methods course. In the project, PSTs work with a supervising or mentor teacher in the field to select and implement an appropriate assessment and intervention protocol and to interact with a small group of students in the classroom, with mathematics as the center of the interaction across a 4- to 6-week time frame. PSTs mimicked an RTI process by diagnosing students' mathematical knowledge and skills by giving a preassessment, analyzing student data, selecting appropriate materials, and creating lessons specifically to address the instructional needs of students, as noted in the diagnostic, resulting in four intervention lessons. Following each lesson, PSTs informally monitored student progress through each lesson and completed a postassessment to determine progress at the end of the 4- to 6-week interaction. The PSTs were also expected to continually reflect on this process of assessment, intervention, and monitoring as a simulation of a campus-based RTI procedure, while receiving feedback from the course instructor.

Focus group interviews were conducted with small groups of PSTs during concurrent enrollment in the mathematics methods course. The structure for the interview sequence followed Seidman's (2006) three-interview series. Questions were open ended so as to allow participants to reconstruct experiences within the confines of the topic of study. The purpose of these interviews was to identify PSTs' perceptions and experiences with RTI through university course work and field experiences and to identify how the PSTs are able to transfer their learning to their active fieldwork experiences.

Data Analysis

A document analysis approach was used to examine data gathered from the MIP. The analysis focused on pre- and postassessment data and formative assessments as a decision-making tool, specific reflections on lesson planning and applicability to the teaching practice, and mathematical understandings of how to intervene with students explicitly connected to an RTI practice. PSTs' MIP documents were uploaded into NVivo 10 software and initially coded using Haskell's transfer principles, aligned with accepted RTI practices. NVivo 10 is a qualitative data analysis software package that facilitates the organization of unstructured data by classifying, sorting, and arranging information to determine relationships, patterns, and/or trends in the data (QSR International, 2014).

The interview portion of the data analysis involved digitally recording, transcribing, and uploading the digitally written material into NVivo 10. The interviews served as a method to probe deeper into the experiences that PST participants had with RTI in prior preservice courses, thus establishing an extensive knowledge base about RTI based on the first principle of Haskell's transfer theory. Second, the interviews provided a way to further examine PSTs' experiences with RTI through the mathematics methods course and field-based experiences, specifically in regard to transferring their knowledge through the mathematics interactions project. Data gleaned from the focus group interviews were analyzed using coding categories from the principles in Haskell's transfer theory.

Findings

The data for this study are reported within the context of the relevant corresponding principles of Haskell's theory. Principles 1 and 9 were specifically identified as applicable to the transfer of RTI principles in practice in the MIP; the remaining principles were not seen in analyzing the preservice course work.

Principle 1:
Knowledge in Area That Transfer Is to Occur (Response to Intervention)

Haskell (2001) maintained that for significant transfer to occur, there must be

a depth of knowledge in the area of transfer. This has been supported in research on transfer and learning (Bransford & Schwartz, 1999; Lee, 1998; Lee & Pennington, 1993). In this study, the main transfer area studied was PSTs' knowledge and skills, understanding, and practice of RTI. Analyzing the focus group interviews and MIPs revealed several themes related to RTI understanding as part of the university program.

Course work. PST participants were asked about knowledge and understanding of RTI within the context of prior coursework and experiences as part of the teacher preparation program at the university. Responses varied greatly according to degree plans; discrepancies in course coverage and experiences related to RTI emerged. ESL and bilingual degree plans are nearly identical, with the exception of a single language-oriented course; for the purposes of this report, the bilingual candidate will be grouped with the fellow ESL participants.

English as a second language. PSTs on the ESL plan frequently cited class lectures, Microsoft PowerPoint presentations, online learning modules, and the course textbook as the main sources of RTI learning from course work at the university. When asked what courses covered RTI, students had some trouble isolating the individual courses; however, further investigation led to identification based on common instructors and/or topics mentioned. These courses included ESL Instructional Strategies, Assessment of Reading, and a single SPED course that all non-SPED candidates are required to take. The attention to RTI in these courses was reported as scarce in depth and breadth of coverage. Students frequently stated that courses with RTI coverage only introduced basic definitions, referenced the tier triangle of instruction, and gave quizzes that checked for understanding as methods for teaching and assessing understanding of RTI. Comments from ESL student participants regarding exposure to RTI in university course work provide insight: "I remember seeing a slide [Microsoft PowerPoint] on it and I remember there was a part of the book that we read that had it in there" (Focus Group A, Interview 1); "I'm [on the] ESL [plan] and we probably looked at it on a [Microsoft] PowerPoint. We probably had to memorize it for a quick quiz but didn't go into depth about it" (Focus Group B, Interview 1). None of the responses about RTI learning were answered in relation to the mathematics or other methods courses but only about prior course work.

ESL PSTs frequently mentioned a lack of concrete or hands-on experiences with RTI and also indicated the desire to see more practical applications of RTI within course work experiences. This was the case within three of the four focus groups. Students within ESL degree plans offered the following thoughts about the lack of practical experiences in the ESL degree plans: "I just feel like we didn't really get much practical experience or hands-on stuff with RTI" (Focus Group A, Interview 1); "It's just different, and I would like more practice on how to do interventions and how to work with kids who are struggling" (Focus Group C, Interview 1).

Special education. Students on the SPED degree plan gave very different responses when asked about course work and RTI learning experiences. These students did not reference textbook definitions, lectures, or presentations as ways that they learned about RTI but rather gave specific examples and projects from their SPED courses. These students cited several courses and projects in which they had to assess students in the classroom, create interventions, monitor progress, and make decisions based on student data. Five SPED courses were commonly referenced and are courses that only SPED majors are required to take.

Furthermore, candidates in the SPED degree plans frequently cited learning and experiences in these courses that mirrored RTI experiences. One participant stated, "I have extensively studied RTI for our classes. EDSP 4330 and 4320 are our assessment and evaluation classes and the strategies for special education. We actually had to do an RTI project" (Focus Group A, Interview 1). Another said,

> Most of the special education classes that we take in some aspect have RTI within them, whether it's creating a lesson plan or going into the classrooms and seeing their RTI tiers and what those teachers are doing. I can remember the family and community class that we had to take here at [university]. I guess it integrated a lot of RTI, most of them, if not all of them, have RTI. And you learned about it each time at the very beginning of the semester, you reiterate it over and over again. (Focus Group C, Interview 1)

Two main projects surfaced from conversations with the SPED students about RTI course work. The first, known as the RTI project, was cited most frequently. In this project, PSTs had to work with an individual struggling student in the classroom for 10 weeks. The teacher candidate was required to give an initial assessment to determine the student's educational need, provide academic interventions to the child at a certain level of frequency, monitor progress of the student by taking data points, and make educational decisions based on the data collected. The other project was less cited and was known as the Communities in Schools project, where teacher candidates had to spend 10–15 hours working with a student. However, this project appeared to be more open ended, as only one preservice candidate referenced tutoring a student in an academic area related to RTI intervention implementation.

Tier model. When asked foundational questions about RTI and what it was, PSTs almost always referred to a tiered model of instruction and referenced the RTI tier triangle, including Tiers 1, 2, and 3. Differences in understanding about RTI became apparent when discussing the tiered model, as the question was answered at a more basic level by students participating in the ESL certification program than by students participating in a SPED plan. ESL teaching candidates narrated the following on the definition of RTI: "It is progressively more intervention for students, like the higher the level, the more support they need" (Focus Group A, Interview 1); "It's just building on what the students know, putting them into the

different levels. And just small-group instruction to help each group progress as quickly and as efficiently as possible, I guess" (Focus Group C, Interview 1).

Additionally, responses about the definition of RTI from the ESL participants indicated a high degree of uncertainty and hesitation about their understanding of RTI. Responses from the participants were frequently followed with phrases such as "I guess," "I'm not sure," "I'll let someone else elaborate," "I don't know," and "is that correct?" Phrases such as these were used in at least eight of the individual responses from the ESL participants across all four of the focus group interviews. Responses such as these were not seen among the SPED candidates.

In three of the four focus group sessions, at least one SPED participant was in attendance. The fourth focus group comprised only ESL degree plan participants. In this focus group session, none of the PSTs were able to give a working definition or indicate foundational understanding of RTI related to a tiered model of intervention other than to point at what they were seeing in their field-based experiences: "I don't really know much about it" (Focus Group D, Interview 1); "I don't really know much about RTI either . . . I feel like it's something I haven't really been as prepared for as I could've been through this program" (Focus Group D, Interview 1).

Thoughts and definitions about the RTI triangle from the few SPED participants were more detailed and hinted at a depth of understanding from previous course work that involved RTI projects and principles:

> Being in the special ed program, I have extensively studied RTI. EDSP 4330 and 4320 are our assessment and evaluation classes and the strategies for special educa-tion. We actually had to do an RTI project. So let me explain to you RTI . . . (Focus Group A, Interview 1)

This respondent went on to give an elaborate definition of RTI, including giving a preassessment, monitoring progress for at least three or more points of reference, providing and modifying an appropriate intervention according to a child's individual progress, and then adjusting the intervention frequency or intensity as necessary. Other narratives by SPED participants in other groups indicated similar detailed understanding of RTI, for example,

> There are three tiers, and I've actually had to do a response to intervention project in one of my classes where I worked with a student for 10 individual sessions and did a report on that. So in Tier 1, I just know that that's where the majority of the children are, and then Tier 2 is a little bit more one-on-one instruction, and then of course Tier 3 is the most intense instruction. (Focus Group B, Interview 1)

References to the RTI tier triangle were indicated as having been part of previous course work rather than part of current course work in the mathematics or other methods courses.

Intervention. PSTs in the ESL and SPED programs alike referred to RTI and the purpose of the MIP within the context of a system to provide assistance in the

form of interventions to struggling students. Terms frequently used to identify this component of RTI included providing differentiated instruction, giving modifications and accommodations, using strategies for helping struggling or ESL learners, providing individualized instruction, and scaffolding. Teachers in both degree plans also described the extent of strategies gained in their course work to help struggling learners, although the specific strategies were aimed at either helping students with learning, behavioral, or other exceptionalities, as in a SPED program, or helping ESL students acquire a second language, as in the ESL program. This became a concern among some of the ESL participants in applying or generalizing the strategies to learners other than those with whom their course work prepared them to work, for example,

> I feel like having the ESL certification puts emphasis on learning how to teach ESL students, which is great, but we still have other students that I feel lost sort of the emphasis because it's always, well, "How do you make language modifications?" . . . In my field placement I have kids with behavior issues, this one child can't sit down long enough to do the work. I'm like, "I don't know how to help him. How do I make him sit here and do his work or how do I make sure he's learning?" It's like if it was an ESL student I could tell you how to modify, but I don't feel like our classes have really put an emphasis on things like this. (Focus Group D, Interview 1)

Alternately, SPED candidates indicated more willingness to generalize strategies for providing intervention to all students, regardless of academic need:

> As special ed majors, we had an entire class on intervention, like behavioral intervention as well as educational intervention and how to accommodate for different types of learners. Even the experiences that the learners we might come in contact with might be having how to support them in those situations. (Focus Group C, Interview 1)

Assessment and progress monitoring. PST candidates in the ESL and SPED degree plans frequently referred to the concept of assessment and monitoring progress of a student when discussing RTI and the purpose of the MIP. Assessment was seen as a way to identify a student's instructional level or areas of academic weakness, either before or after introducing a concept. Assessments were also seen as a way to monitor progress of a student throughout the instructional sequence. When ESL majors discussed the concept of assessment, frequently it was discussed in isolation, and the ESL major did not reference giving a specific strategy or intervention; several of these participants talked about how they gave assessments in their prior course work (reading classes, ESL classes) to determine the level at which a particular student was working. However, these conversations did not insinuate further action through decision making and planning to provide an intervention to assist a child: "There's a few of the assessment classes that we've taken, which are helpful in figuring out what students are struggling

and at what level they're struggling, or specifically what they're struggling with" (Focus Group A, Interview 1).

Responses from the SPED participants regarding assessment and progress monitoring indicated a complementary balance of assessment as a way to make decisions for future intervention implementation through course work experiences and the purposes of the MIP:

> But in one of our courses we specifically chose an area that needed work with a student, and one-on-one did the assessments. And then built lessons on that, either progressively getting more difficult or broken up like scaffolding and things like that as needed. (Focus Group C, Interview 1)

Only one ESL preservice participant cited the MIP as an authentic and novel way to implement both the assessment and intervention strategies that had been learned in prior course work rather than creating generic lesson plans based on the Texas Essential Knowledge and Skills (TEKS). She stated,

> I think it [MIP] also helps—it's [like] a real teacher, you know, we're assessing our students, figuring out what their needs are and then teaching and interacting with them based on that. . . . So it's kind of like a way to see how that whole process works. Instead of like, oh, as a class, this is the TEKS we need to meet. It's about what aren't we meeting, where do we need to go from here. I feel it's really authentic. (Focus Group D, Interview 1)

SPED candidates appeared to have more authentic opportunities to implement assessments and monitor progress than did ESL candidates as part of an authentic lesson cycle with students.

Future teaching contexts. Toward the completion of the MIPs, PSTs were asked two questions to determine their levels of confidence and motivation in intervening with future students. The first question regarded comfort level in implementing mathematics interventions to students in need; the second question asked teachers about their confidence in implementing an RTI process with students. Responses to these questions varied greatly, and differences were evident between ESL and SPED candidates' answers to the second question. Table 1 illustrates the numbers and percentages of responses to both questions.

Regarding the mathematical question, there were 12 overall responses, with 10 participants sharing their relative confidence to intervene mathematically with future groups of students. There were no significant differences in the responses from students in the two degree plans: Both SPED and ESL teachers proportionally responded that they were confident in intervening mathematically. There were, however, differences in how they attributed this confidence. Some teachers cited their learning in the mathematics methods or prior math learning courses, whereas others talked about their experiences with the MIP. The PSTs who expressed a lack of confidence cited their discomfort with teaching more difficult math con-

tent as part of an upper-grade curriculum and their confusion with using so many mathematics strategies to teach a particular math concept. The positive responses about intervening mathematically were the only responses that both ESL and SPED teachers made. The following quotation is representative of some of the comments PSTs made about their confidence in intervening mathematically:

> I now have a better grasp on how to kind of start that process and at least may do some preassessments or something more like needs assessment to kind of see where they are, gather their work, just since we've practiced a lot, kind of looking critically at student work. I mean, even in other subjects other than math, I think I would at least know where to start. . . . I think I feel more prepared to at least start get that ball rolling. (Focus Group A, Interview 3)

Responses to and perceived confidence regarding the second question were much more varied. Overwhelmingly, 68% of the responses to the question about PSTs' confidence in implementing RTI with a struggling student were negative or demonstrated a lack of perceived confidence. Five of the 22 responses were positive in nature, but these responses were all from SPED candidates. All 15 of the negative responses were from ESL candidates across all four focus groups. Two ESL PSTs talked about RTI in a neutral context. Both of these participants shared that during their field experiences, they witnessed their mentor teachers implementing RTI, which led them to understand more about the process. But this did not necessarily lead them to respond that they were confident about implementing RTI in a future setting. The following quotations from a SPED and an ESL candidate, respectively, are representative of responses to the question about confidence in implementing RTI in future settings:

> I feel pretty confident. I'm special ed certified, or I will be. I think that with that, we've gotten a lot of additional strategies and stuff that we can use, specifically within RTI classes and things like that. I feel like I'm pretty prepared for that, and math is a big part of what we do. My first rotation, the majority of what we did

Table 1

Frequency of Positive, Neutral, and Negative Responses to Future Interactions Questions

	English as a second language	Special education	Total (%)
Confidence to intervene mathematically			
Positive	7	3	10 (83)
Negative	2		2 (17)
Confidence to implement RTI			
Positive		5	5 (23)
Neutral	2		2 (9)
Negative	15		15 (68)

Note. RTI = response to intervention.

was math, one-on-one or in small groups, so I got a lot of information from that, also. (Focus Group C, Interview 3)

I know I need to work on it [RTI] because I don't feel that confident because I'm ESL, so we haven't discussed it in any of my classes at [university] either, so I'm not aware. I know what it is, but I don't know how to implement it. (Focus Group B, Interview 3)

These questions revealed discrepancies between ESL and SPED candidates with regard to factors that influenced PSTs' understanding of mathematics intervention as RTI; both groups of PSTs were confident in intervening mathematically with students in future settings after completion of the MIP, but only SPED candidates shared their confidence in implementing RTI.

Mathematics interaction project. PSTs in the MIP samples made no specific learning references to the tier model, RTI triangle, or intervention or assessment processes. The only specific mention of RTI came in the form of a quotation from one ESL student, who said that she wished she had learned more about RTI within the context of the MIP:

A suggestion that I would make is to familiarize the student teachers with the RTI program prior to the math interaction project. I say this because as an ESL teacher, I came into this math methods class knowing nothing about RTI, except that it was divided into three tiers of learning when working with a child. However, I wish I had a deeper knowledge about RTI and how to weave it into math intervention strategies with various grade levels of students. I feel like I could have learned much more about RTI at a deeper level if I was able to learn some of the strategies in class.

RTI was not specifically inherent to the MIP projects based on the results of this study.

Principle 9:
Drill and Practice

Haskell's (2001) ninth principle can be summed up in the common saying that "practice makes perfect." However, Haskell believed that opportunities for practice need to be reflective in nature rather than involving rote memorization and repetition strategies. The term practice has two basic meanings that are important to consider in understanding this principle: First, practice is to do or perform something repeatedly to attain and master a skill; second, "practice is to continually work at something as in a profession or vocation" (p. 171). In other words, Haskell believed that for meaningful transfer to take place, learners must be provided with opportunities to meaningfully, reflectively, and repeatedly practice their learning.

Focus group interviews revealed relatively little information about opportunities for PSTs to practice theoretical and practical knowledge about intervening with students as part of an RTI or intervention process, other than what was specific

to the MIP. Students on the SPED plan referred to a 10-week RTI project and an additional project in which they worked with a student or person with disabilities. However, the consistency of implementation and specific components of this practice are unknown; many assignments seem to be tied to individual courses or course instructors. ESL candidates, too, referred to other experiences practicing reading assessments and to instructional practice with ESL students, but the specifics are also unknown. One preservice participant summed up her perceptions about the lack of hands-on practice, experience, and opportunities for PSTs to work with students by saying,

> The practice, it is for kids who are supposed to make their educational experience hands-on and authentic and mean something. And I don't get that feeling with our classes. It's all about the theory, what are you going to do, this is how you can modify it, this is how you could do it. But we're not getting the hands-on. . . . For instance, role-playing; how about if a student had this? How would you handle it? Have our teachers give us feedback, things like that. That doesn't happen. (Focus Group D, Interview 1)

In discussing the MIP as an opportunity to get classroom experience working with students in an instructional cycle of intervention and assessment, one participant echoed the sentiments expressed by others regarding their lack of experience and practice opportunities:

> I feel like this project will be a good way for us to get more experience, like accommodating to the fit the needs of children and planning for children. But I feel like, it also will still kind of leave us feeling like, "OK. Well, we know how to do this on a small scale." And I don't know if it'll give us what we need to be able to do it on a bigger scale for a whole class. (Focus Group D, Interview 1)

Drill and practice opportunities regarding intervention and assessment implementation were not positively identified and were rarely connected to an explicit RTI process. Information gleaned from the data in this study demonstrated that the MIP is one of the relatively few opportunities that PSTs had to practice their learning in an authentic, instructional environment with students. The preceding quotation suggests a recurrent concern shared among PSTs about their ability to implement intervention and appropriate instruction for students on a larger scale, owing to limited practical opportunities during their course work at the university.

Discussion

Differences in levels of transfer existed between the ESL and SPED candidates. ESL candidates evidenced a lower level of application transfer regarding RTI understanding and practice. This level of transfer is best defined as using what has been learned and then applying it to a specific situation (Haskell, 2001). In this case, ESL teachers demonstrated knowledge and skills acquired in the mathematics

methods course and applied this knowledge to their interactions with students as part of the MIP in the field-based setting but did not purposely see this interaction as an example of the RTI process in action.

Several factors contributed to this lower level of transfer. ESL candidates did not strongly exhibit the first principle of transfer, a core foundational knowledge of RTI. ESL PSTs repeatedly cited a lack of knowledge about RTI and inadequate opportunities to practice implementing RTI with students. Additionally, ESL teachers overwhelmingly admitted that they were not confident in implementing RTI in future teaching settings, and many participants shared that RTI was something they needed to learn more about before stepping into the classroom as a first-year teacher. ESL PSTs were confident in mathematically intervening with struggling students in a future context, as evidenced by interviews and MIP statements, although participants appeared to be so wholly engrossed with the definition of RTI and related terminology (tiers, interventions) that they could not identify the underlying relationships between the MIP and RTI after completion of the project. This was mainly due to inadequate foundational knowledge of RTI and a lack of practical experience with RTI in action prior to the MIP (Principles 1 and 9), although failure to adhere to the other principles was also a contributor.

Although Principle 7, cultural and contextual supports of transfer, was considered related to mathematics instruction and intervention as part of the MIP, no evidence exists that these supports existed for RTI learning. PSTs stated that prior university course work did not support RTI learning, prior course instructors were perceived as having little knowledge about RTI, field-based settings were not consistent in providing access to RTI experiences, and RTI was not included as part of the mathematics methods course. Additionally, drill and practice opportunities were nonexistent prior to the MIP.

Candidates in the SPED degree program evidenced a much higher level of near-transfer regarding RTI understanding and practice. At this level of transfer, learners were able to use previous knowledge and transfer this knowledge to new situations that were similar but not identical to the original learning environment (Haskell, 2001). In this study, SPED teachers used prior knowledge, skills, understanding, and experiences in both prior SPED classes and assignments and the mathematics methods course to apply learning about RTI within the context of the MIP assignment. Even before they started the MIP implementation, in many instances, SPED candidates referred to the MIP as a project that "mirrored" other experiences they had had in SPED course work.

Several principles contributed to the higher level of transfer that SPED PSTs experienced. SPED candidates demonstrated a more thorough knowledge of RTI, including experiences and examples. ESL candidates were only able to recall basic definitions and topical details. The main difference between ESL and SPED candidates regarding RTI knowledge was that SPED teachers, unlike their ESL counterparts, were able to understand the similarities and underlying structural components of the

MIP that represented RTI in action; thus they experienced a higher level of transfer about the project. When asked about confidence in intervening mathematically in future settings and implementing RTI, SPED candidates responded emphatically about their confidence in doing so. This suggests that SPED candidates were able to conceptualize the MIP, coupled with prior learning, as comprising practice opportunities that mimicked RTI interactions.

RTI learning was not specifically supported through the mathematics methods course or field-based environment, and SPED candidates indicated that prior learning opportunities and course instructors had served as cultural and contextual supports for learning about RTI (Principle 7). Finally, SPED candidates indicated additional drill and practice opportunities to practice implementing RTI with students through prior learning as part of their SPED course work.

Implications

There appears to be a discrepancy between what RTI was intended to do and how PSTs are prepared to apply RTI principles. RTI has been repeatedly positioned as a general education intervention system intended to immediately target students struggling to achieve mastery in the regular curriculum (Fletcher & Vaughn, 2009; Mastropieri & Scruggs, 2005). Thus it is expected that general education teachers will have the primary responsibility for implementing screening, assessment, and intervention and for monitoring interventions that come as part of RTI. However, in this case, PSTs in the ESL degree program had little to no background knowledge of RTI from course work, and despite implementation of the MIP, they were unable to demonstrate transfer of learning about the tenets of the MIP to a wider application of RTI in the MIP. SPED candidates achieved a greater degree of transfer because prior course work in the degree plan allowed for a more thorough knowledge, understanding, and experience of RTI. The discrepancy in this case is that SPED candidates will almost exclusively teach students who have already been identified for special education services and will not actually implement RTI interventions with general education students. The implication is that confusion about RTI and its purpose in the general education venue will continue.

The SPED program at the university takes ownership in preparing future teachers in RTI to assist struggling students, whereas the teacher education program responsible for training general educators does not. Thus it can be assumed that although RTI is widely heralded as a general education intervention, it is actually seen as a process that falls under SPED authority. The findings are consistent with prior studies in PST education and RTI practices (Begeny & Martens, 2006; Kuo, 2013; Neal, 2013); SPED PSTs typically receive more in-depth preparation than their general education counterparts. Specifically, Neal's was the only study to include both general education and SPED PSTs in the sample, and Neal similarly

found that SPED PSTs demonstrate higher levels of self-efficacy in implementing RTI due to more extensive course work and implementation opportunities.

It is evident that by creating specialized degree plans (ESL, bilingual, SPED), the university is preparing a generation of teachers who are highly trained to work with certain groups of students but who lack the skills and knowledge required to work with those who do not fall under the criteria of their specialized programs. PSTs in the ESL program tended to see RTI as a feature of SPED; reflections frequently showed that they only had one SPED class, although they had numerous classes about working with ESL learners. The interesting part about this is that students who most often need access to RTI interventions are those requiring ESL and language modifications and accommodations for learning. Thus it appears that a thorough understanding of RTI and its practices is greatly needed among all general educators as a fundamental component of being prepared to work with a diverse group of students in our schools today.

Instrumental in achieving this point is that RTI be consistently included within the context of general education intervention. As is, RTI learning occurs primarily in the context of SPED courses at the university and is only briefly mentioned in other courses. RTI learning was not part of the mathematics methods course or any other methods or ESL course work according to the participants. It is recommended that RTI be a foundational tenet of all education courses at the university in helping PSTs understand the important components of the intervention process. ESL classes, pedagogy, and methods/content course work can achieve this simply by incorporating the features of RTI into already existing instruction. In the case of the mathematics methods course, the MIP was an ideal assignment that exemplified the features of RTI in action and helped PSTs in understanding how to use assessment data and interactions with students to make decisions and drive future instruction. As evidenced by the SPED candidates, strengthening foundational knowledge and contextual supports, and increasing the number of opportunities for drill and practice (Principles 1 and 9), can increase the level of learning transfer.

According to the latest report of the Office of Special Education Programs (2013), students with learning and other moderate disabilities are increasingly receiving all or the majority of their instruction in the general education classroom. Current educational trends emphasize general education interventions and differentiation as the way to meet individual learning needs rather than sending students to specialized classrooms. RTI serves as the "gatekeeper" between general education interventions and SPED identification and requires that the general education teacher be familiar with the best instructional practices to work with diverse learning needs. Effective RTI practices are necessary to assist students rather than just referring them for SPED placement, especially if all students require are small-group or one-on-one interventions to master the curriculum. A comprehensive understanding of RTI is crucial at the university level so that PSTs can transfer these practices when confronted with diverse learning needs on a regular basis in the classroom.

Limitations

Prior course work was not used as a data source for this study. Although differences in the degree programs related to generic content based on the course titles and descriptions were evaluated, specific assignments, practices, and knowledge from these courses were relatively unknown. Thus, in looking at the background knowledge of RTI learning among the SPED and ESL candidates, the main gauges for measuring Principles 1 and 9 were PSTs' responses to questions in the focus group interviews and their written reflections on the MIP.

Cultural and contextual support of RTI learning in the field is something that the university has little control over outside of course work. The university can most definitely oversee course work and learning about RTI in specific courses, such as SPED, ESL, and methods classes, but cannot guarantee that all PSTs have identical experiences in the field. PSTs were assigned to a variety of districts, campuses, grade levels, and teachers, all of which accounted for a wide variety of experiences according to the individual policies and practices of a respective district. As the findings suggest, the campus and mentor teachers exhibited quite a bit of authority over what PSTs had access to regarding RTI practices. Many PSTs did not see RTI practices or were unsupported in their efforts to learn about the process in a classroom setting. Cultural and contextual supports of learning are deeply dependent on the participating district and mentor placement and cannot be regulated to provide consistent experiences for PSTs; it is the job of the university to support teachers in their learning about RTI implementation, and any field-based support should be considered as a bonus learning opportunity. Results of the study support the need for increased preparation in RTI practices for PSTs, regardless of degree program, but especially for teachers pursuing the general education classroom as a future career.

Conclusion

RTI is a vital component of supporting at-risk students in schools today. General education teachers must be prepared to handle diverse learning needs. RTI is the accepted practice to assist students who struggle to master the curriculum by immediately identifying, targeting, and monitoring learning needs. Much of a teacher's preparation to implement academic interventions comes from his or her preservice preparation. University preparation programs should consider transfer of learning and generalization to future teaching practices as the ultimate goal for PSTs.

References

Ajuwon, P. M., Lechtenberger, D., Griffin-Shirley, N., Sokolosky, S., Zhou, L., & Mullins, F. E. (2012). General education pre-service teachers perceptions of including students with disabilities in their classrooms. *International Journal of Special Education, 27*(3), 100–107.

Atiles, J. T., Jones, J. L., & Kim, H. (2012). Field experience + inclusive ECE classrooms = increased preservice teacher efficacy in working with students with developmental delays or disabilities. *Educational Research Quarterly, 36*(2), 62–85.

Baker, S., Gersten, R., & Dae-Sik, L. (2002). A synthesis of empirical research on teaching mathematics to low-achieving students. *Elementary School Journal, 103*(1), 51–73.

Begeny, J. C., & Martens, B. K. (2006). Assessing pre-service teachers' training in empirically-validated behavioral instruction practices. School Psychology Quarterly, 21(3), 262–285.

Benander, R., & Lightner, R. (2005). Promoting transfer of learning: Connecting general education courses. *Journal of General Education, 54*(3), 199–208.

Bevevino, M. M., Dengel, J., & Adams, K. (1999). Constructivist theory in the classroom: Internalizing concepts though inquiry learning. *The Clearing House, 72*(5), 275–278.

Borich, G. D., & Tombari, M. L. (1997). *Educational psychology: A contemporary approach* (2nd ed.). New York, NY: Longman.

Bos, C., Mather, N., Dickson, S., Podhajski, B., & Chard, D. (2001). Perceptions and knowledge of preservice and inservice educators about early reading instruction. *Annals of Dyslexia, 51*, 97–120.

Bransford, J. D., & Schwartz, D. L. (1999). Rethinking transfer: A simple proposal with multiple implications. *Review of Research in Education, 24*, 61–100.

Brownell, M. T., & Pajares, F. (1999). Teacher efficacy and perceived success in mainstreaming students with learning and behavior problems. *Teacher Education and Special Education, 22*(3), 154–164.

Calais, G. J. (2006). Haskell's taxonomies of transfer of learning: Implications for classroom instruction. *National Forum of Applied Educational Research Journal, 20*(3), 1–8.

Clark, C. M., & Lampert, M. (1986). The study of teacher thinking: Implications for teacher education. *Journal of Teacher Education, 37*(5), 27–31.

Clark, R. E., & Voogel, A. (1985). Transfer of training principles for instructional design. *Education Communication and Technology, 33*(2), 113–123.

Comier, S. M., & Hagman, J. D. (Eds.). (1987). *Transfer of learning: Contemporary research and application*. New York, NY: Academic Press.

Conderman, G., & Johnston-Rodriguez, S. (2009). Beginning teachers' views of their collaborative roles. *Preventing School Failure, 53*, 235–244.

Danielson, L., Doolittle, J., & Bradley, R. (2007). Professional development, capacity building, and research needs: Critical issues for response to intervention implementation. *School Psychology Review, 36*, 632–637. Retrieved from EBSCOhost database.

Engelmann, S. (1988). The logic and facts of effective supervision. *Education and Treatment of Children, 11*, 328–340.

Fletcher, J. M., & Vaughn, S. (2009). Response to intervention: Preventing and remediating academic difficulties. *Child Development Perspectives, 3*, 30–37.

Fuchs, D., & Fuchs, L. S. (2006). Introduction to response to intervention: What, why, and how valid is it? *Reading Research Quarterly, 41*, 93–99.

Fuchs, L. S., Compton, D. L., Fuchs, D., Paulsen, K., Bryant, J. D., & Hamlett, C. L. (2005). The prevention, identification, and cognitive determinants of math difficulty. *Journal of Educational Psychology, 97*, 493–513.

Fuchs, L. S., & Fuchs, D. (2006). A framework for building capacity for responsiveness to intervention. *School Psychology Review, 25*, 621–626.

Gao, W., & Mager, G. (2011). Enhancing preservice teachers' sense of efficacy and attitudes

toward school diversity through preparation: A case of one U.S. inclusive teacher education program. International *Journal of Special Education, 26*(2), 92–107.

Gersten, R., Chard, D. J., Jayanthi, M., Baker, S. K., Morphy, P., & Flojo, J. (2009). Mathematics instruction for students with learning disabilities: A meta-analysis of instructional components. *Review of Educational Research, 79*, 1202–1242. doi:10.3102/0034654309334431

Goodlad, J. I., & Field, S. (1993). Teachers for renewing schools. In J. I. Goodlad & T. C. Lovitt (Eds.), *Integrating general and special education* (pp. 229–252). New York, NY: Merrill.

Greenfield, R., Rinaldi, C., Proctor, C. P., & Cardarelli, A. (2010). Teachers' perceptions of a response to intervention (RTI) reform effort in an urban elementary school: A consensual qualitative analysis. *Journal of Disability Policy Studies, 21*(1), 47–63.

Grogg, K. R. (2009). *Preservice teacher perspectives on prereferral intervention and student support teams* (Unpublished doctoral dissertation). Retrieved from ProQuest Dissertations & Theses database. (UMI No. 3401602)

Hadadian, A., & Chiang, L. (2007). Special education training and preservice teachers. *International Journal of Special Education, 22*, 103–106.

Haskell, R. E. (2001). *Transfer of learning: Cognition, instruction, and reasoning.* San Diego, CA: Academic Press.

Hawkins, R., Kroeger, S. D., Musti-Rao, S., Barnett, D. W., & Ward, J. E. (2008). Preservice training in response to intervention: Learning by doing an interdisciplinary field experience. *Psychology in the Schools, 45*, 745–762.

Hoppey, D. (2013). Linking action research to response to intervention (RtI): The strategy implementation project. *Networks: An Online Journal for Teacher Research, 15*(1), 1–10.

Individuals With Disabilities Improvement Act, 20 USC §1414 in et seq. (2004).

Korthagen, F. A. J., & Kessels, J. P. A. M. (1999). Linking theory and practice: Changing the pedagogy of teacher education. *Educational Researcher, 28*(4), 4–17.

Kuo, N. (2013). *Examining the impact of IRIS-RTI modules on preservice teachers' knowledge of response to intervention in reading* (Unpublished doctoral dissertation). Retrieved from ProQuest Dissertations & Theses database. (UMI No. 3589844)

Lancaster, J., & Bain, A. (2010). The design of pre-service inclusive education courses and their effects on self-efficacy: A comparative study. *Asia-Pacific Journal of Teacher Education, 38*(2), 117–128. doi:10.1080/13598661003678950

Lee, A. Y. (1998). Transfer as a measure of intellectual functioning. In S. Soraci & W. J. McIlvane (Eds.), *Perspectives on fundamental processes in intellectual functioning: A survey of research approaches* (Vol. 1, pp. 351–366). Stamford, CT: Ablex.

Lee, A. Y., & Pennington, N. (1993). Learning computer programming: A route to general reasoning skills? In C. R. Cook, J. C. Scholtz, & J. C. Spohrer (Eds.), *Empirical studies of programmers: Fifth workshop* (pp. 113–136). Norwood, NJ: Ablex.

Mastropieri, M. A., & Scruggs, T. E. (2005). Feasibility and consequences of response to intervention: Examination of the issues and scientific evidence as a model for the identification of individuals with learning disabilities. *Journal of Learning Disabilities, 38*, 525–531.

Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice teachers about early literacy instruction. *Journal of Learning Disabilities, 34*, 472–482.

McCombes-Tolis, J., & Spear-Swerling, L. (2011). The preparation of preservice elementary educators in understanding and applying the terms, concepts, and practices associated

with response to intervention in early reading contexts. *Journal of School Leadership, 21*, 360–389.

McCray, E. M., & Alvarez-McHatton, P. (2011). "Less afraid to have them in my classroom": Understanding pre-service general educators' perceptions about inclusion. *Teacher Education Quarterly, 38*(4), 135–155.

McHatton, P. A., & Parker, A. (2013). Purposeful preparation: Longitudinally exploring inclusion attitudes of general and special education pre-service teachers. *Teacher Education and Special Education, 36*(3), 186–203.

National Council for Accreditation of Teacher Education. (2010). *Blue Ribbon Panel on Clinical Preparation and Partnerships for Improved Student Learning*. Retrieved from http://www.ncate.org/LinkClick.aspx?fileticket=zzeiB1OoqPk%3D&tabid=7

National Council on Teacher Quality. (2013). *Teacher prep review 2013 report*. Retrieved from http://www.nctq.org/dmsView/Teacher_Prep_Review_2013_Report

National Mathematics Advisory Panel. (2008). *Foundations for success: The final report of the National Mathematics Advisory Panel*. Washington, DC: U.S. Department of Education.

National Reading Panel. (2000). *Report of the National Reading Panel: Teaching children to read* (NIH Publication No. 00-4654). Bethesda, MD: National Institute of Child Health and Human Development, National Institutes of Health.

Neal, A. (2013). *Training pre-service teachers in response to intervention: A survey of teacher candidates* (Unpublished doctoral dissertation). Brigham Young University.

No Child Left Behind (NCLB) Act of 2001, Pub. L. No. 107-110, §115, Stat. 1425 (2002).

Nunn, G. D., & Jantz, P. B. (2009). Factors within response to intervention implementation training associated with teacher efficacy beliefs. *Education, 129*, 599–607.

Office of Special Education Programs. (2013). To assure the free appropriate education of all children with disabilities. In *35th annual report to Congress on implementation of the Individuals With Disabilities Education Act*. Retrieved from http://www2.ed.gov/about/reports/annual/osep/2013/parts-b-c/35th-idea-arc.pdf

Orosco, M. J., & Klingner, J. (2010). One school's implementation of RTI with English language learners: "Referring into RTI." *Journal of Learning Disabilities, 43*, 269–288.

Otaiba, S., Lake, V., Greulich, L., Folsom, J., & Guidry, L. (2012). Preparing beginning reading teachers: An experimental comparison of initial early literacy field experiences. *Reading and Writing, 25*, 109–129. doi:10.1007/s11145-010-9250-2

Prasse, D. P., Breunlin, R. J., Giroux, D., Hunt, J., Morrison, D., & Thier, K. (2012). Embedding multi-tiered system of supports/response to intervention into teacher preparation. *Learning Disabilities: A Contemporary Journal, 10*(2), 75–93.

QSR International. (2014). *What is qualitative research?* Retrieved from http://www.qsrinternational.com/what-is-qualitative-research.aspx

Rademacher, J. A., Wilhelm, R. W., Hildreth, B. L., Bridges, D. L., & Cowart, M. F. (1998). A study of preservice teachers' attitudes toward inclusion. *Educational Forum, 62*(2), 154–163.

Richards, C., Pavri, S., Golez, F., Canges, R., & Murphy, J. (2007). Response to intervention: Building the capacity of teachers to serve students with learning disabilities. *Issues in Teacher Education, 16*(2), 55–64.

Rinaldi, C., Averill, O. H., & Stuart, S. (2011). Response to intervention: Educators' perceptions of a three-year RTI collaborative reform effort in an urban elementary school. *Journal of Education, 191*(2), 43–53.

Rose, D. J., & Church, R. J. (1998). Learning to teach: The acquisition and maintenance of

teaching skills. *Journal of Behavioral Education, 8*, 5–35.

Rossett, A. (1997). That was a great class, but . . . (transfer of training). *Training and Development, 24*(7), 18–24.

Scammacca, N., Roberts, G., Vaughn, S., Edmonds, M., Wexler, J., & Reutebuch, C. K. (2007). *Reading interventions for adolescent struggling readers: A meta-analysis with implications for practice*. Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Scardamalia, M., & Bereiter, C. (1989). Conceptions of teaching and approaches to core problems. In M. C. Reynolds (Ed.), *Knowledge base for the beginning teacher* (pp. 37–46). New York, NY: Pergamon Press.

Seidman, I. (2006). *Interviewing as qualitative research* (3rd ed.). New York, NY: Teacher's College Press.

Stofflet, R., & Stoddart, T. (1994). The ability to understand and use conceptual change pedagogy as a function of prior content learning experience. *Journal of Research in Science Teaching, 31*(1), 31–51.

Stuart, S., Rinaldi, C., & Higgins-Averill, O. (2011). Agents of change: Voices of teachers on response to intervention. *International Journal of Whole Schooling, 7*(2), 53–73.

Tom, A. R. (1997). *Redesigning teacher education*. New York, NY: State University of New York.

Van Laarhoven, T. R., Munk, D. D., Lynch, K., Bosma, J., & Rouse, J. (2007). A model for preparing special and general education preservice teachers for inclusive education. *Journal of Teacher Education, 58*, 440–455.

Voss, J. A., & Bufkin, L. J. (2011). Teaching all children: Preparing early childhood preservice teachers in inclusive settings. *Journal of Early Childhood Teacher Education, 32*, 338–354.

Wanzek, J., & Vaughn, S. (2007). Research-based implications from extensive early reading interventions. *School Psychology Review, 36*, 541–561.

Wilcox, K. A., Murakami-Ramalho, E., & Urick, A. (2013). Just-in-time pedagogy: Teachers' perspectives on the response to intervention framework. *Journal of Research in Reading, 36*(1), 75–95. doi:10.1111/j.1467-9817.2011.01494.x

Wubbels, T. (1992). Taking account of student teachers' preconceptions. *Teaching and Teacher Education, 8*(2), 137–149.

Wubbels, T., Korthagen, F. A. J., & Brekelmans, M. (1997). Developing theory from practice in teacher education. *Teacher Education Quarterly, 24*(3), 75–90.