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An investigation of pre-service teacher and faculty knowledge on RTI

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AN INVESTIGATION OF PRE-SERVICE TEACHER AND FACULTY

KNOWLEDGE ON RTI

An Abstract of a Thesis

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ABSTRACT

Response to Intervention (RTI) is being used in schools more often and continues to be a more accepted way to help students prior to the need for special education services. RTI is a three-tiered system of support that provides an opportunity for teachers to look at their instruction and curriculum and adjust based upon student progress and needs. The RTI framework, when implemented with fidelity, has been shown to effectively assist students get academic help early and limit the number of special education referrals (VanDerHeyden, Witt, & Gilbertson, 2007).

Although RTI has been shown to promote positive change in student outcomes, there are still several problems with RTI implementation and the framework. One of the biggest issues is the insufficiency of teacher training. Teachers' are going into the field feeling like they have little to no knowledge of RTI and how to implement it in the classroom (Barrio & Combes, 2014). The purpose of this study is to assess pre-service teachers' knowledge of the RTI framework and confidence in that knowledge. Additionally, this study will investigate faculty knowledge of RTI in order to better understand student knowledge on this topic. Due to the current lack of research on this topic, the current study will add to the current research on pre-service teacher's knowledge of RTI.

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has been approved as meeting the thesis requirement for the

Degree of Education Specialist

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TABLE OF CONTENTS

LIST OF TABLES

Literacy Review

In 2004, the Individuals with Disabilities Improvement Act (IDEA) was signed into law (U.S. Department of Education). Under the new IDEA, practitioners were no longer required to consider the discrepancy between intellectual ability and achievement to identify children with specific learning disabilities. In order to be diagnosed with a specific learning disability (SLD) within the discrepancy model, student scores on an IQ test must be significantly discrepant from scores in one or more academic areas on an academic achievement test (Lichtenstein, 2014). Instead, the U.S. Department of Education proposed that practitioners could use a process in which there is consideration of the child's response to scientific, researcher-based intervention, which in schools, is often referred to as Response to Intervention (RTI).

RTI is a framework for using data to make decisions about which interventions and academic supports students need to be successful. The "R" in RTI stands for "response;" teachers respond to their students' learning and if needed, make changes to instruction when warranted. The "I" in RTI stands for "intervention." The intensity of an intervention can be increased by altering the frequency of learning, lengthening lesson times, and providing smaller group sizes. RTI is a general education initiative; therefore, the purpose of RTI is to help students from falling significantly behind prior to the need for special education (Fuchs & Fuchs, 2006); however, the RTI framework must also include a process for accessing special education. The special education referral process, since the reauthorization of IDEA, can now include an evaluation of student responses to general education interventions or it can include the use of the Intellectual Ability-

Achievement discrepancy model. The implementation of RTI has been proven to have positive effects (Meyer & Behar-Horenstein, 2015; Greenfield, Rinaldi, Proctor, & Cardarelli, 2010) Many pre-service, new, and veteran teachers do not have sufficient knowledge to implement RTI within their classrooms and have many misconceptions about the goals of RTI (Castro-Villarreal, Rodrigues, & Moore, 2014). The purpose of this review is to explore pre-service teacher training on RTI and how this training might be improved considering the continued increase in RTI implementation across districts in the US.

Response to Intervention

The RTI framework allows teachers to consider at their classroom instruction and curriculum and make changes prior to a student being diagnosed with a learning disability. The RTI framework is used for eligibility determination of a learning disability and not for other eligibility categories. The RTI framework allows teachers to train their students in new ways to support and meet students' needs (Fuchs & Fuchs, 2006) without immediately turning to special education for supplemental support. The first tier of the RTI framework is universal instruction, which is considered to be the general education curriculum, and all students receive this level of support (Kaufman, 2009). When a student is unsuccessful in the first tier of RTI, as demonstrated by a discrepancy between their achievement and their peers' achievement, then they are eligible to receive more targeted instruction in tier two. Tier two support is generally provided through small group instruction that is targeted to the needs of the group (Kaufman, 2009). Small group instruction is often implemented within the general education classroom; meaning

children are not pulled out for this service. If a student continues to be unsuccessful despite targeted, supplemental interventions, that student is moved to more intensive interventions at tier three. Tier three is considered to be the most intensive tier and may be considered special education depending on the state or district (Kaufman, 2009). However, in some districts or states tier three is the last tier of resources a student receives within general education prior to being referred for special education; special education is then considered tier four (Kaufman, 2009).

The RTI framework utilizes data-based decision making, meaning that all decisions regarding the movement of a child to different levels of intervention is based on data (Fuchs & Fuchs, 2006). The RTI framework is designed to focus on results, not processes, embrace prevention, and always look at children with disabilities as general education students first and special education students second (Lichtenstein, 2014). Although a major contribution of RTI is that it is a prevention-focused framework, many teachers still view RTI as a reactive procedure. Teachers may perceive RTI as something that is used once a student is already having academic problems; however, the RTI framework is actually used to prevent a discrepancy from becoming a problem (Barrio & Combes, 2014). Currently, many teachers believe that RTI is just a gateway to special education, and many others think it is an unnecessary process (Castro-Villarreal et al., 2014). However, many teachers also note that they have basic knowledge about RTI, but do not know how to implement the framework (Spear-Swerling & Cheesman, 2012). It is possible that this lack of knowledge about implementation leads to the perception that RTI is an unnecessary process used as a gateway to special education. Unfortunately,

this lack of knowledge may lead teachers to overlook the positive aspects of the RTI

framework.

<u>Positive Aspects of RTI</u>

Although not all teachers have a complete understanding of what RTI is or the

goals related to it, the RTI framework has proven to be a positive initiative when

implemented with fidelity. First, the framework of RTI has pushed teaching teams to look

at data-based decision-making as a more collaborative practice (Meyer & Behar-

Horenstein, 2015). Teachers reported that they were more likely to bring their data

together and create curricula based on student achievement across an entire grade level

instead of as individual classrooms (Meyer & Behar-Horenstein, 2015). In a different

study, interviewed teachers described looking at student data through online resources

such as iReady, an online system used to help identify student need, to determine the tier

that best supports student needs (Alahmari, 2018). One unique aspect of RTI is that the

framework allows teachers to respond and adapt to the student's academic needs based

on the data that is collected. Teachers report that the use of progress monitoring through

the RTI framework allows them to see the effectiveness of their instruction (Greenfield et

al., 2010). Alahmari (2018) found that teachers who saw progress in their students' skills

through the use of an intervention were more likely to see the RTI process as a positive

framework and implement the intervention effectively. Further, the RTI process has

allowed teachers to feel more in tune with their students (Cowan & Maxwell, 2015).

Teachers feel they are better able to understand and adapt to student needs within the RTI

instructional framework. They also feel more aware of what students need to succeed in the classroom (Cowan & Maxwell, 2015).

Finally, the RTI framework has allowed students to be helped prior to them falling significantly behind their peers. The RTI framework is a preventative framework that provides a structure for teachers to recognize a student's need for help prior to them falling so far behind that they no longer are able to catch up with their peers within general education curriculum. By using the discrepancy model, referrals for learning disabilities often took place at the late elementary level or later (Lichtenstein, 2014). By the time a student advanced to the late elementary level, the child was already past the critical point where an intervention or specialized instruction would have been most effective (Lichtenstein, 2014). Additionally, within this framework students can get assistance prior to going through a qualification process for special education; therefore, it is considered by some to be a "speedy" process that quickly gives students the resources they need without having to wait for a special education referral (Owen, 2013; Tilly, 2008). RTI was designed to embrace prevention and early intervention (Lichtenstein, 2014) by addressing difficulties in the general education setting. Some teachers agree that if RTI is implemented correctly, they will be able to help more students than just those identified as having a disability or those who are in special education; teachers be better equipped to help students, all who are served by the general education curriculum (Cowan & Maxwell, 2015).

In a study conducted across the United States on the evaluation of RTI in reading, researchers looked at schools that implemented RTI and the effects on children's reading

abilities. They found that districts that implemented RTI were better able to assist their students prior to a need for a special education evaluation (Balu et al., 2015). Based upon the results of this study, it was found that students who were in general education benefited significantly from the RTI framework and were able to receive help prior to the need for special education (Balu et al., 2015). By addressing academic difficulties in the general education classroom, it is possible that districts will be able to limit the number of special education referrals. In a study conducted with current School Psychologists that were recruited using the National Association of School Psychologists (NASP) database of NASP members, just over half of the respondents indicated that the use of RTI decreased the number of special education referrals (Sullivan & Long, 2010). Of the 557 participants surveyed in this study, 68.3% of those working in a school that used RTI noted that the framework improved student achievement, 39.3% noted that the framework improved school culture, and 38.7% noted that the framework improved school climate (Sullivan & Long, 2010). In a different study, conducted with a district in southwestern United States, researchers found that the RTI framework limited the number of students evaluated for special education, limited the number of English language learners evaluated for special education, and decreased the number of students who qualified for special education (VanDerHeyden, Witt, & Gilbertson, 2007). In summary, when RTI is properly implemented in schools, it can greatly improve the match of student need to instruction and help limit the number of students evaluated for special education. In order to ensure those improvements can happen, however, it is

imperative that teachers are well-trained on procedures involved in implementing the RTI framework.

Pre-Service Training in RTI

There is a deficit in RTI training for veteran teachers, new teachers, and pre-service teachers. RTI is taught within higher education; however, there is typically not a class that focuses solely on RTI for pre-service teachers going into general education (Harvey, Yesseldyke, & Jones, 2015). Special education teachers are more likely than general education teachers to be exposed to RTI during their pre-service training (Harvey et al., 2015). Pre-service teachers that have some RTI knowledge believe that this framework helps address the needs of students and supports monitoring student progress; however, they know little about how to implement RTI (Neal, 2013).

In a recent research study, Barrio and Combes (2014), investigated pre-service general education teachers' concerns about going into the field and teaching. They found that many general education majors' biggest concerns were about RTI. These pre-service teachers felt they had little to no knowledge about what RTI is or how to implement it within their classrooms. They were also concerned about what their responsibility would be within the RTI framework. Further, they felt that they did not have enough training on RTI and needed extra training prior to entering the field (Barrio & Combes, 2014). The pre-service teacher participants in this study were in their last course prior to student teaching. They would not be getting any further coursework; therefore, these pre-service teachers would not gain any further knowledge about the RTI framework and how to implement it before entering the classroom as full-time teachers.

In another study conducted one year later, researchers found that special education pre-service teachers, on the other hand, felt that RTI was incorporated into many aspects of their classes and felt confident about the process (Harvey et al., 2015). In a different study, conducted with both general education and special education pre-service teachers, researchers found that many students reported a significant difference in the frequency with which RTI is discussed between their special education classes and general education classes. They noted that RTI was addressed more often and in more detail within special education classes (Neal, 2013). RTI is considered to be an early intervention tool, meaning that it is meant to address student needs prior to the need for special education (Neal, 2013); however, researchers have found that special education pre-service teachers have more knowledge about RTI than general education pre-service teachers (Spear-Swerling & Cheesman, 2012). General education teachers, who will be implementing tier one and tier two supports in their classrooms, have little to no knowledge about RTI or how to implement it (Spear-Swerling & Cheesman, 2012). This poses a problem because if special education teachers are the most prepared to enter into a district that implements the RTI framework, how are students going to get the early intervention within their general education classroom? Further, this discrepancy in training across special and general education program presents the idea that RTI is a special education initiative, when it is not.

The difference between the frequency with which RTI is talked about in general education and special education courses at the college level could be due to professor knowledge of RTI. It has been found that college professors who teach special education

courses have greater knowledge of RTI than professors teaching general education courses (Harvey et al., 2015). In a study conducted with nine institutes of higher education in the Midwestern United States, researchers found that many college faculty who taught general education did, in fact, have a general knowledge of RTI; however, professors who taught general education at the secondary level pre-service courses had less confidence in their knowledge related to the RTI framework compared to those who taught elementary general education pre-service courses (Harvey et al., 2015). Overall, most professors surveyed did not feel comfortable teaching RTI, which could be related to how much RTI is discussed in college level courses. When interviewing students, who were in both general education and special education classes, general education pre-service teachers noted that within their general education classes, RTI was talked about as a theory and not as an intervention or something they would be doing in the classroom; whereas, special education pre-service teachers noted that RTI was talked about as something they will be doing in the classroom (Neal, 2013).

As RTI is becoming a large part of many school systems, it is concerning that education on RTI does not appear to be a large part of training for all pre-service teachers. Many student teachers reported more frustration as they were beginning to learn and use RTI during their student teaching experiences. They believed they had no knowledge of RTI when placed in student teaching experiences and felt very frustrated when trying to implement it (Neal, 2013). As RTI is a newer way of providing early intervention and prevention to general education students, many current teachers are having the same frustrations that pre-service teachers are experiencing.

In-Service Teachers Knowledge of RTI

Based upon research with pre-service teachers, it is likely that many general education teachers, especially less recent graduates within the field, have limited knowledge of RTI (Castro-Villarreal et al., 2014). In-Service teachers report that RTI is confusing and often they are not sure what level a student is on or how to support them (Alahmari, 2018). As noted previously, some teachers view the RTI framework as a gateway to special education, and others feel that RTI is an unnecessary process because it delays a child receiving special education services (Castro-Villarreal et al., 2014). Although some teachers believe they know what RTI is, when asked about the process and how to implement it within their reading curriculum, a significant number of teachers did not know what to do (Spear-Swerling & Cheesman, 2012).

Along with the lack of training, teachers think that RTI involves a lot of paperwork and keeps them from performing more important duties related to their job. Many teachers reported RTI to be confusing and claimed it puts too much responsibility on the general education teachers (Castro-Villarreal et al., 2014; Cowan & Maxwell, 2015). Along with these concerns, teachers also reported they have a hard time balancing a classroom of students while trying to do an intervention with another student or group of students (Cowan & Maxwell, 2015). Teachers also are concerned about RTI not being effective with all students, and it being a waste of time. They feel that although RTI is effective with some students, they have had students where no interventions were helpful and teachers report it delayed the student getting the extra help in special education (Stapleton, 2017). One teacher admitted that most of the teachers within her school put in

extra effort to help a student prior to the standardized test. They did this in hope that the student would receive a good test score and, in turn, result in them not having to move the child into a higher tier of RTI. Since the child would not be moved to tier two or higher within the RTI framework, the teacher would not have to do more paperwork, move the student to a different intervention group, or gather more data. Another participant in the same study stated that the best part of RTI is when they finally get to the point where the student can get tested and qualify for special education (Cowan & Maxwell, 2015). This is problematic in that teachers are not understanding that the purpose of RTI is to help students earlier and possibly prevent the need for special education (Sullivan & Long, 2010).

There is an increasing number of states adopting RTI (as cited in Castillo & Bastche, 2012); therefore, it is imperative that our teachers are fully knowledgeable about what RTI is, its purpose, and how to implement it schoolwide (Berkeley, Bender, Peaster, & Saunders, 2009). Through a survey conducted with 142 teachers across the country, researchers found that many teachers had heard about RTI and understood what RTI is, but lacked the knowledge to implement it (Spear-Swerling & Cheesman, 2012). Since there is a significant lack of training of how to implement RTI, many teachers do not feel comfortable gathering data or implementing RTI strategies in their classroom (Cowan & Maxwell, 2015). Finding an intervention for a student through the RTI framework only works when data is collected consistently and correctly (Kaufman, 2009), and if teachers are unsure of how to collect the data, educators cannot rely on RTI as a way to identify an appropriate intervention for a student. More specifically, educators use assessment to

gather information about a student to make appropriate instructional decisions within the RTI framework. When the assessments are not administered correctly, problematic consequences may follow, including teacher misidentification of students area of improvement and therefore a inappropriately chosen intervention, failure to understand student needs, and miscommunication to parents and other staff members on how to adequately help a student (Chappuis & Stiggins, 2012).

Continuing Problems with RTI

Even though the RTI framework has resulted in some positive impacts on student achievement, there remain several problems with RTI implementation and some controversies with respect to the framework itself. As mentioned previously, one of the problems is a lack of training for both pre-service and in-service teachers (Castro-Villarreal et al., 2014). If the lack of teacher training continues to be a problem, the RTI framework will not successfully support students and teachers within a classroom. As the RTI framework is slowly becoming more popular within the education system, we must train our pre-service teachers to be competent in RTI facilitation once they enter the schools. An increase in RTI-focused professional development for current teachers would be an effective way to decrease the current problems with the lack of skill and confidence in RTI implementation. In a three-year longitudinal study, researchers found that when professional development is focused on a specific teaching practice, teachers are more likely to implement what they learned within their classrooms (DeSimone, Porter, Garet, Yoon, & Birman, 2002). Therefore, according to this finding, if administrators implement more RTI focused professional development programs for in-service teachers, they are

more likely to accurately implement the RTI framework in their classrooms. One

problem that may impact teacher professional development in RTI is the lack of

administrator knowledge. One researcher examined administrator knowledge of the

Multi-Tier Systems of Support (MTSS) framework, which RTI falls under. Drury (2018)

found that administrators lacked knowledge of how to implement MTSS, how to train

teachers in MTSS, and what would be involved in MTSS training. One administrator

reported that progress monitoring is a part of MTSS, but is not imperative for RTI, which

is not correct (Drury, 2018). Overall, teachers need to be learning about the RTI

framework, its positive effects on student achievement, and need time to learn and

practice how to accurately implement RTI in their classrooms from those who are

competent and confident in their knowledge of RTI.

    A second problem that was also previously introduced, is that there is a common

misconception that RTI is just a gateway to special education (Castro-Villarreal et al.,

2014). Administrators must begin training teachers and support staff to look at the RTI

framework as a way to assist students prior to needing special education, not as a way to

identify students for special education (Burns, 2007). Once this shift in thinking occurs, it

is more likely that RTI will be more effective in preventing serious academic difficulties.

However, it was found that while administrators reported they had a well-rounded

knowledge of RTI, when researchers asked the administrators implementation questions,

few of these leaders knew that RTI is a multi-tiered support system for academics and

few leaders knew about the knowledge and training teachers required to appropriately

implement the framework (Duruy, 2018). Further, when RTI is viewed as a gateway to

special education, educators are limiting the ways they can use this framework. A different way to look at RTI is to view it also as a way to help talented and gifted (TAG) students. Many educators look at the RTI framework as a way to only help students who are demonstrating difficulties in the classroom, not students who are excelling in the classroom. Many students are not screened for TAG programs until the end of second grade or early third grade (Coleman & Hughes, 2009); but, by using the RTI framework, schools can begin nurturing and promoting a child's strengths early on instead of waiting. Teachers can also use progress monitoring to choose appropriate instruction and interventions for students who are excelling, whether or not they are in a TAG program (Coleman & Hughes, 2009). Overall, the misconception of RTI being a special education initiative limits how the framework can help all students (Redenius & Skaar, 2017).

A third problem is that there is no uniform way to carry out RTI. While this might also be a strength of the framework, there are difficulties associated with its easy adaptability (Burns, 2007). Many teachers have different definitions of how to implement interventions, collect data, and make decisions through this process, and often different schools will follow different ways to implement the RTI framework. Different schools having different ways to implement the framework could pose a problem because each school can have different qualification guidelines for students to be moved up or down within the tiered system (Gresham, 2005). Therefore, if a student is considered to be in tier two in one district, and the family moves, they could be considered in tier one in a different district. This could pose a problem as then the student is no longer receiving the additional supports in the general education classroom that they were receiving in the

previous school. Further, in many schools, the determination of special education

eligibility under Specific Learning Disability (SLD) is determined by RTI data. As of

2009, 15 states were using the model for SLD identification, and 32 of the remaining

states were in the process of adapting it at the time of the research (Berkeley et al., 2009).

Therefore, a student could be considered having a SLD in one district, but not in another,

which could determine if a child is labeled as having a learning disability and receiving

services or not (Gresham, 2005). Like anything new, RTI and the implementation of the

framework has some issues to be worked out; however, many of these issues will be

helped by increasing teacher training and knowledge.

How to Help Teachers

Even though RTI implementation is imperfect and there exist misperceptions

about the framework, some teachers view RTI as a positive intervention and would like

to learn more about it (Cowan & Maxwell, 2015); however, there is a lack of literature on

how to implement RTI training for teachers (Barrio, Lindo, Combes, & Hovey, 2015).

The RTI framework was noted as one of the best intervention processes to help schools

reform their curriculum to increase student success (Burns, 2007). As RTI is a way to

provide early intervention, school personnel need to focus on helping students as early as

possible, which would be in tier one or two. Researchers suggest, that by focusing on

earlier tiers, educators are more likely able to effectively help a student prior to the need

for intensive interventions (Burns, 2007). It has also been noted that by creating a

universal definition of RTI and universal methods of implementation, school personnel

can help eliminate the confusion that teachers report and increase knowledge and skills needed to implement RTI with fidelity (Burns, 2007).

Davis (2017) found, through interviews, that teachers feel RTI is a great process but are concerned about the lack of training they received. Many teachers reported that more professional development on RTI would be, in their opinion, the best way to help them (Castro-Villarreal et al., 2014). Offering professional development within the schools is beneficial in that this training would provide new skills and knowledge to staff members, provide new approaches to curriculum, help teachers find new ways to help students, and enhance collaboration within the schools (Joyce & Calhoun, 2010). Teachers reported that they received rare, brief meetings where they were provided with a definition of RTI and the components of it, but did not receive any training that provided research-based interventions or implementation strategies (Davis, 2017). In a different study, teachers were provided consistent, detailed training in both the RTI process and in programs to use to help assist in the implementation of the RTI process. These teachers felt they had a well round knowledge of the RTI framework and felt the process was very effective in helping students early (Alahmari, 2018). Professional development that is created specifically targeting the needs of the teachers and students in a building can be effective in helping teachers understand their role in RTI and how to implement it effectively (Duffy, 2018). Providing professional development on the process of RTI for all staff within the school will provide everyone the opportunity to learn how to implement this framework in the same manner, and as a result, staff will be better prepared to help all students.

A second suggestion many teachers noted as a way to help them was the use of an online data tool for data collection (Castro-Villarreal et al., 2014). One tool that is currently available for teachers is AIMSWeb. This tool is used to help teachers collect and manage data through an online data system that is easy to use. AIMSWeb provides teachers universal screening tools, progress monitoring tools, along with data managing tools (Pearson, 2014). This is only one tool created to help with the RTI framework, and many other tools are available to help teachers make this process faster and easier, such as DIBELS, Curriculum-Based Measurement (CBM), Easy CBM, FAST assessment, I-Ready, STAR, and many more (National Center on Intensive Intervention, 2016).

A third suggestion that was noted by teachers is extra time to collaborate and time specified to work with students in interventions. Many teachers noted being extremely frustrated with the RTI model because they did not have enough time to collaborate with other teachers, administrators, and support staff (Meyer & Behar-Horenstein, 2015). In one study, teachers who were interviewed suggested that a sectioned-out period at the end of the day dedicated to RTI planning would be helpful (Castro-Villarreal et al., 2014). If the RTI framework is to be used, teachers want to collaborate with other teachers and support staff to make lesson plans that follow the RTI framework; however, there is typically no time for teachers to collaborate with support staff throughout the day (Myer et al., 2015). By allowing a separate period during the day, teachers would have time to fill out paperwork and potentially conduct some of the tier two interventions with students. Many schools have a block of time dedicated to tiered instruction. Some schools call it "power hour" or "tier time", and each student is assigned to a different group based

on their skill level (Shapiro, n.d.). Typically, general education teachers are assigned to implement a tier one or a tier two intervention, reading specialists are assigned to implement a tier two or tier three intervention, and special education teachers are typically assigned to implement a tier three intervention. During the "power hour," students go to their designated groups and work on their particular intervention. One positive aspect of this is that students who are meeting benchmarks are able to work on activities that enhance their education. This might include working on poetry or something that is not typically taught in the general education curriculum (Shapiro, n.d.). By having these designated periods for tiered intervention, students are getting the additional supports they need, and other students are getting the opportunity to extend their learning. Additionally, this time can also be used for teachers to work on the paperwork needed for the interventions. Teachers could use the last several minutes of the blocked time to focus on documenting what they did with the student and the effects.

The fourth suggestion brought up by teachers is more administrative support. Many teachers also expressed a lack of administrative support. As they begin to implement RTI, they want greater administrative support and more professional development (Myer et al., 2015). Lastly, pre-service teachers noted that they want RTI exposure during their pre-service training. They felt they would have been better prepared to enter into the education field if they were able to observe RTI being implemented within the schools prior to student teaching (Neal, 2013). By beginning RTI training in college, these students would be better prepared to enter into the field, in turn, helping the students in schools.

<u>Conclusion</u>

Since the reauthorization of IDEA in 2004, RTI has been noted as an adequate way to identify students with SLD (U.S. Department of Education). Since that time, many schools have reformed their general education systems to use the RTI framework as a way to provide prevention and early intervention academic services to students at all academic levels. RTI is a tiered system of interventions that is aimed at helping students succeed prior to the need for special education (Fuchs & Fuchs, 2006). The RTI framework allows teachers to respond to student needs and adjust their instruction based on student progress (Kaufman, 2009). While implementation of RTI has resulted in positive impacts on students, there remain potential problems with the implementation of the RTI framework. Many pre-service, new, and veteran teachers do not have sufficient knowledge to implement RTI within their classrooms and have many misconceptions about the goals of RTI (Castro-Villarreal et al., 2014). There are also no universal procedures or qualifications for RTI resulting in confusion among school staff members. In addition to the lack of knowledge that surrounds RTI, there is a lack of education in this area too. It was reported that most college professors knew what RTI was, but did not feel comfortable teaching it in their classes (Harvey et al., 2015).

Overall, the RTI framework, when implemented correctly, is reported to help students succeed early on in their academic careers prior to the need for special education. This framework also provides structure to teachers that leads them to be more in tune with their students' needs, and helps teachers better understand where their students are falling behind (Cowan & Maxwell, 2015) so that they can adjust their

instruction. As school districts and teachers continue implementing the RTI framework, there needs to be a focus on training teachers during their undergraduate program. Pre-service teachers need to gain competence with the knowledge and skills required to implement this framework with fidelity, and with a reported lack of professor knowledge, this could be difficult (Harvey et al., 2015). In addition, districts need to be providing more focused professional development programs for new and veteran teachers so every teacher has a common understanding of the goals and process of RTI. RTI specific professional development was shown to help in-service teachers feel more confident in their ability to implement the intervention within their classroom (Alahmari, 2018). Finally, educators need to have a complete understanding of their role for the RTI framework to be implemented with fidelity. When the RTI framework is implemented correctly, teachers will be more likely to support the academic success of most of students.

<div align="center">Statement of Purpose</div>

RTI is a relatively new concept in education, and it continues to become more accepted in schools since the U.S. Department of Education proposed the use of the framework for diagnosing specific learning disabilities (SLD) in 2004. RTI is a general education initiative that is meant to be used as a way to provide prevention and early intervention services to students; however, as the framework is also used for SLD determination, many educators believe the framework is a special education initiative. With this, many general education teachers are not being trained on the RTI framework or how to implement it within their classroom.

The RTI framework is used in many of schools today because use of the framework has often resulted in positive student outcomes. The framework has been proven to help students prior to the need for special education (Balu et al., 2015), and limit the number of special education referrals when implemented correctly (Lichtenstein, 2014). With the framework growing in popularity, teachers are expected to know how to implement it when they enter their first teaching positions. However, research has shown that many pre-service general education teachers do not know how to implement the framework, and many continue to believe that RTI is only a special education initiative (Neil, 2013).

There is limited research on pre-service teacher's knowledge of the RTI framework and its implementation, and even fewer studies that have investigated professor knowledge about the RTI framework. Current research on this topic focuses more on special education pre-service teachers, rather than general education pre-service teachers and does not look at students and professors at the same university. Therefore, the current study will add to the limited research about pre-service teachers' knowledge about the RTI framework and its implementation and expand to include university professor knowledge of RTI.

Research Questions:

1. To what extent are pre-service teachers knowledgeable about RTI implementation?

2. To what extent are pre-service teachers confident in their knowledge and application of RTI?

3. To what extent are university professors knowledgeable about RTI?

4. To what extent is there a relationship between year in current position and knowledge of RTI for university professors?

<div align="center">Methods</div>

Participants

Participants included 101 undergraduate education students and 42 adjunct, tenured or tenure-track College of Education faculty at a Midwestern University. Student participants included pre-service education students that were in advanced years of their teacher education program or in student teaching. It was reported that 4 participants were in their 2nd year of college, 55 participants in their 3rd year of college, 25 participants in their 4th year of college, 18 participants in their 5th year of college or beyond. Majority of pre-service teacher participants at this stage of their program have likely taken all core courses that may have discussed the RTI framework and its implementation. Pre-service teacher participants included 92 Caucasian participants and 9 participants that identified as a different race. The faculty survey was sent to 180 faculty members, and 42 faculty members responded to the survey for a 23% return rate. Faculty participants included 24 females and 18 male participants who ranged in age from 31 to over 61 years of age. Of the 42 faculty participants, 14 had between 0-5 years of experience in higher education, 10 faculty participants had between 6-15 years of experience, 7 participants had between 16-20 years of experience, and 11 participants had over 20 years of experience. Faculty participants were from several departments within the educator preparation program

including elementary education, special education, educational psychology, and secondary education.

Procedures

Pre-service student participants that were not student teaching were recruited by the researcher from a mandatory course generally taught the semester prior to student teaching. This course is one of the last courses that pre-service teachers take prior to going out in the field; therefore it was chosen because at this point in their education, any RTI education would have been provided previous to pre-service teachers taking this course. Participants were sent a multiple-choice assessment and a survey electronically through Qualtrics at the beginning of class. Students were read the recruitment script and then directed to the link sent to their email. Students who chose not to participate were asked to read silently. All faculty within the educator prep program and all student teacher candidates at a Midwestern university were sent an email containing the link with the URL link inviting them to participate. The link directed them to the survey in Qualtrics where they were asked to provide consent for participation and to answer the demographics and survey questions.

Measures

Pre-service teacher participants were asked their demographic information along with where they learned about RTI to determine year in school and when in their undergraduate education they may have learned about RTI. They were given a 12-item multiple choice questionnaire and a survey. The multiple-choice questionnaire assessed participant's current knowledge of RTI. The questions had a total-item correlation for

each item of above .2, which provides some evidence of validity (Skaar & Schmitz, 2018). Reliability of this questionnaire was measured by Sc, which is a measure of reliability for criterion-references assessments and is used to estimate consistency in outcomes of tests (Coscarelli & Shrock, 2002). The index Sc resulted in a calculation of .41 which demonstrates adequate reliability of the scores (Skaar & Schmitz, 2018; Coscarelli & Shrock, 2002). Pre-service teachers were also asked to complete a survey. The survey contains 3 Likert-type items designed to assess participant confidence in RTI implementation on a scale of 1 (not confident) to 5 (very confident) and one short answer response that asked students to describe their knowledge about the RTI framework. Cronbach's alpha of the survey items for this sample was $\alpha = .94$.

Faculty participants were given a survey developed by Harvey et al. (2015) that consists of 14 forced choice items and 53 Likert-type items on a scale of 1(strongly disagree) to 4 (strongly agree) scale with 5 being "I don't know". The survey consists of four sections; an explanation of the survey, demographic information items, items pertaining to programming practices and RTI, and items regarding university practices. According to Harvey et al. (2015), internal consistency reliability of the Likert-type items was adequate ($\alpha = .95$). For the purposes of this study, only the quantitative items and sections will be used. Conbach's alpha was calculated for the present sample and the reliability coefficient was $\alpha = .95$. Items were delivered to faculty participants via email through Qualtrics.

Data Analysis

Data was first analyzed using descriptive statistics. The researcher analyzed the number of correct items and described participants reports of confidence in RTI implementation. Descriptive statistics were also used to analyze faculty responses on the multiple-choice questionnaire and Likert-type scale. A correlational analysis was used to measure the relationship between faculty years of experience and knowledge of the RTI framework.

Results

Research question number one focused on pre-service teacher knowledge of RTI implementation. Frequency statistics were used to determine how many participants correctly answered each knowledge question regarding RTI. On average, participants scored an 8.9 out of 12 (SD = 1.77; Range = 10) on the knowledge portion of the questionnaire. There were a few questions which the majority of participants were unable to answer. Question four asked participants "The first question to be asked in an RTI/MTSS system is…". 22.7% of students were able to accurately answer this question indicating that many students are unaware that the core curriculum is the initial target of problem solving in an RTI model. Additionally, only 69.4% of participants were able to accurately identify what Tier three includes (item 8; refer to Appendix A) and an average of 58.9% of participants were able to accurately respond to questions that asked them to apply the RTI procedures to scenarios given to them (items 11 and 12; refer to Appendix A).

The second research question focused on pre-service teacher confidence in implementing and explaining the RTI framework. A majority of participants responded that they were not at all confident or a little confident in their ability to implement the RTI framework (refer to Table 1) and in their ability to explain or teach RTI to someone else in the field. When participants were asked, 71.4% of participants indicated that they are not at all confident or a little confident in their ability to clearly explain RTI to someone once in the field, and 74.5% of participants are not at all confident or a little confident in their ability to teach RTI to someone else. This indicates that the pre-service teachers surveyed lack the confidence to implement the RTI framework or explain the framework to others.

Table 1. Pre-Service teacher's confidence in their ability to implement the RTI framework.

Confidence Rating	Frequency	Percentage of Respondents
Not at All Confident	36	37%
A Little Confident	38	39%
Somewhat Confident	18	18%
Confident	5	5%
Very Confident	1	1%

Research question number three focused on university faculty knowledge of RTI. Descriptive statistics were used to analyze the responses on the faculty RTI measure. The mean for participants' responses to "I have a comprehensive knowledge of RTI principles and concepts" was a 2.57 (SD = .96, Range = 4), meaning there was a split between respondents who disagreed with this and participants who agreed with this statement. 51.4% of respondents reported that they "strongly disagree" or "disagree" with this statement. This indicates that many university faculty members do not feel they have

comprehensive knowledge regarding RTI principles and concepts. In addition, 52% (M =

3, SD = .74) of university faculty members responded disagree or strongly disagree to

"RTI is explicitly taught in my department" and 49% (M = 2.78, SD = .79) of faculty

members responded disagree or strongly disagree to "My department provides adequate

resources to support RTI instructional efforts." Responses from faculty indicate that half

of faculty members lack comprehensive knowledge in RTI, but about half of faculty

participants also report that there are not adequate resources to support teaching RTI in

their department.

Table 2. Faculty response to "I have a comprehensive knowledge of RTI principles
and concepts".

Response	Frequency	Percentage of Respondents
Strongly Disagree	4	9.5%
Disagree	15	35.7%
Agree	12	28.6%
Strongly Agree	5	11.9%
Do Not Know	1	2.4%

The last research question examined if there is a correlation between a faculty's

years of experience teaching in higher education and knowledge of RTI. Results of a

bivariate correlation indicate that there is no relationship between years as a faculty and

knowledge of RTI (r = -.158, p = .359). This indicates that faculty that have been

teaching in higher education longer demonstrate similar knowledge of RTI compared

with faculty who have not been teaching in higher education for as long.

<u>Discussion</u>

Responses from the pre-service teachers indicated that, as they are about to finish

their college classes and enter the field, they have some knowledge of what RTI is, but

lack confidence in their ability to implement this framework. Barrio & Combes (2014) found that pre-service teachers' biggest concern about going into the field centered around RTI and their lack of knowledge of the framework. In the present study, although almost all of the participants surveyed were able to identify what RTI stood for and procedures at tier I and tier II, the majority of surveyed pre-service teachers were unable to identify that the core curriculum is the initial target of problem solving in an RTI model. In addition, pre-service teachers were unable to accurately answer questions that required them to make decisions regarding student placement within the RTI framework. Davis (2017) also found through interviewing in-service teachers, that those teachers in the field also knew basic knowledge of RTI, but lacked the ability to implement the framework. This indicates that there still is a lack of knowledge around what RTI is and how it is implemented in the schools.

More importantly, the data suggests that although pre-service teachers demonstrated basic knowledge of RTI, they also lacked the confidence in their ability explain and implement RTI practices. If students are not confident enough to implement RTI in their classrooms, it suggests they likely do not feel strongly in their own knowledge of this framework. Similar to the results of the present study, researchers found that when they asked teachers in urban districts about their ability to implement RTI, they had low belief in themselves to implement the framework (Prasse et al., 2012). Further, when a direct assessment of skills was done with these teachers, researchers found that only 10% of the teachers had the skills to implement the framework accurately. Therefore, teachers within the Prasse et al. (2012) study demonstrated little

belief in their ability to implement the RTI framework, but also demonstrated few skills on how to implement the framework. Results of the present study demonstrate a lack of confidence in pre-service teachers' ability to implement RTI upon entering the field, and some pre-service teachers reported that they were not familiar at all with the RTI process. When pre-service teachers were asked, "Have you heard of the Response-to-Intervention process" 38 pre-service teachers, or 39% of the surveyed students, indicated that they have not heard of this. This indicates that many pre-service teachers are not being exposed to the RTI process throughout their education. Faculty members at universities hold the responsibility to educate the pre-service teachers so they feel ready to enter the field; however, research suggests that faculty members are unfamiliar with RTI, and therefore, they choose not to teach it in their courses (Barrio & Combes, 2014).

Results of the present study demonstrate that many faculty members felt they lack comprehensive knowledge of RTI concepts and principles. Half of university faculty members who responded to the survey feel they have a comprehensive knowledge of RTI. Harvey et al. (2015) found when they surveyed university faculty, many of them also reported they did not have comprehensive knowledge of RTI. As RTI has been found to help decrease the amount of special education referrals (Sullivan & Long, 2010), improve effectiveness in teacher's instruction through the use of progress monitoring (Greenfield et al., 2010), and it quickly give students the resources they need without having to wait for a special education referral (Owen, 2013; Tilly, 2008), it is important that teachers come in with the knowledge and confidence to implement the framework to help children earlier.

Results of the present study indicate that the amount of time faculty have spent in higher education does not impact their knowledge of the framework, however, many faculty participants did lack basic knowledge of RTI. Due to this lack of knowledge, faculty often do not teach the framework to their pre-service teachers. Half of surveyed faculty members of the current study do not believe that RTI is explicitly taught in their department, but they also do not feel that their department provides adequate resources to support teaching RTI. Faculty members may not teach RTI if they do not have the knowledge to teach it or if they don't feel they have the resources to teach it. Harvey et al. (2015) reported that the university faculty they surveyed noted that they did not teach the RTI framework or practices within their classrooms if they did not feel they had a comprehensive knowledge of what RTI is and how it looks in schools.

If faculty are not teaching the framework in their courses, there should be a way that pre-service teachers obtain this knowledge during their college career. One way that pre-service teachers could learn about RTI more comprehensively is through a mandatory class that focuses on the RTI framework and how to use the framework to make data-informed decisions about student instruction and intervention. In-service teachers report that the use of progress monitoring within the RTI framework helped to identify the effectiveness of the instruction and where to target instruction for their students (Greenfield et al., 2010). If pre-service teachers are taught how to effectively use the RTI model to target instruction prior to entering the field, they may be more confident in their ability to implement the framework. A class that is designed to teach pre-service teachers these skills would be beneficial in helping them gain confidence in their ability to

implement the RTI framework. In addition, if there is an RTI specific class, faculty who do have a comprehensive knowledge of RTI and confidence in teaching and implementing the framework would have the opportunity to teach pre-service teachers and prepare them to enter the education field.

Limitations and Future Research

Although the results demonstrated that half of university faculty reported a lack of knowledge in RTI, less than half of education faculty at the university responded to the survey, indicating a small sample size that may not be representative of the entire education faculty. All surveys sent out to university faculty were through email and gave participants the opportunity to not respond if they have little knowledge about the RTI framework. One faculty emailed back and noted that they did not know what RTI is, and therefore would not respond to the survey. This indicates that results of the survey may not be representative of education faculty member's knowledge of RTI. Further studies should consider a different way to survey faculty members so that even the faculty who have little knowledge of RTI still respond to the survey.

Another limitation to the present study is that all university faculty and pre-service teachers surveyed came from the same Midwestern university. If the survey expanded to include faculty members from universities across the country, a larger population could have been used and results may have shown different results. Further studies need to examine pre-service teachers and faculty members from several universities across a larger region to gain a better representation of the population's knowledge and confidence in RTI.

Another limitation of the present study is that pre-service teachers surveyed included many who were in their final semester prior to student teaching, but also some who were student teaching. As those who are student teaching are in the schools full time, they may have a better knowledge of the RTI framework and how to implement it. Many schools are implementing the RTI framework, therefore, when teachers are placed in the classroom, they may learn how to implement the RTI framework through daily activities with their cooperating teacher. Further studies may want to examine the difference in RTI knowledge and skill between pre-service teachers in their last semester of classes and pre-service teachers who are doing their student teaching. The current study did not ask if students were in their student teaching year, just what year they were in school. It would be beneficial to know if pre-service teachers are learning the knowledge in their classes or if they are learning the RTI framework through student teaching. Many in-service teachers report that through practice of implementing the RTI framework, they felt more confident in their ability correctly implement the framework in their classroom (Alahmari, 2018). If all student teachers are learning RTI in the field, they are not entering the field with the ability to be effective with RTI implementation from the beginning; therefore, helping their students later than if they knew how to implement the framework right away. As RTI is proven to help students early (Owen, 2013; Tilly, 2008), teachers and student teachers should be entering the classroom with the knowledge of how to implement the framework immediately so they can better drive their instruction and help students early.

<u>Conclusion</u>

Results of the present study indicate that there is a general lack of knowledge and confidence in pre-service teacher ability to implement RTI within their classrooms or explain what RTI is to someone else. In addition, many faculty members also lack the knowledge of the RTI framework and confidence in implementing and teaching RTI practices. Having knowledge about RTI implementation, teachers are better able to assist students early and use RTI to progress monitor their student's success to better tailor their instruction to student need (Owen, 2013; Tilly, 2008). Therefore, it is important that pre-service teachers receive education on RTI and how to implement it prior to entering the field. This may be done by providing a class on RTI or by adding RTI concepts throughout several pre-service education classes.

As RTI continues to become more popular in school districts, teachers are expected to come in with the knowledge of how to implement the framework, but many still lack the skills and confidence to implement the framework. Many teachers' biggest concern when entering the field is their lack of knowledge in RTI implementation (Barrio & Combs, 2014). If pre-service teachers are trained appropriately, they will enter the field with the knowledge and confidence to monitor student progress and target instruction to meet their student's needs.

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Appendix A- Pre-Service Teacher Survey

An Investigation of Pre-Service Teacher and Faculty Knowledge on RTI

Demographic Information

Age:_____

Year in college:
   a. 2nd
   b. 3rd
   c. 4th
   d. 5th
   e. more than 5

To what race/ethnicity do you identify?
   a. Caucasian
   b. African-American
   c. Asian
   d. Hispanic
   e. Biracial
   f. Middle Eastern
   g. Other _____

What have you learned about RtI/MTSS?
Please circle the letter that corresponds to the "best" answer to the item.

1. In education, what does the acronym "RtI" stand for?
   a. Reading to Individuals
   b. Response to Intervention
   c. Response to Instruction

2. In education, what does the acronym "MTSS" stand for?
   a. Multi-Tiered Systems of Support
   b. Media & Technology Support Services
   c. Multi-Tower Systems of Service

3. If a school is using RtI/MTSS, where do the interventions take place?
   a. general education only
   b. special education only

c. general and special education

4. The first question to be asked in a RtI/MTSS system is…
    a. Is the core functioning?
    b. Is the student responding to the intervention?
    c. Is the intervention working?
    d. Is the core curriculum research-based?

5. Why would a school choose to implement RtI/MTSS?
    a. The state department of education mandates it.
    b. To ensure that students who are in need of special education intervention receive these services more quickly.
    c. To ensure that the instructional needs of all students are met through instruction and intervention.

6. Tier I of an RtI system includes which of the following?
    a. Assessing all students to investigate the number of students who are meeting benchmarks
    b. Assessing a portion of students to investigate if those students are meeting benchmarks
    c. Providing interventions to 15% of the students in the school.

7. Tier II of an RtI system includes which of the following?
    a. Providing targeted interventions to students who are not meeting benchmarks.
    b. Providing special education services to students who are not meeting benchmarks.
    c. Assessing all students to find those students who are in need of a special education evaluation.

8. Tier III of an RtI system includes which of the following?
    a. Teachers working alone to provide interventions for students
    b. Teachers working with parents, colleagues and experts to provide interventions for students
    c. Teachers working with administrators to figure out which students need to be placed in special education.

9. RtI systems work best when_____.
    a. General education teachers are actively involved.
    b. Students are pulled from core instruction to receive interventions.
    c. Students are given summative assessments regularly.

10. Ms. Vileta has a student who has been on a Tier III behavior plan for 10 weeks, and the data suggest that the student has improved and has met her goal for 5 weeks. What would be the best action Ms. Vileta could take.
    a. Do nothing, the plan is obviously working
    b. Remove some support and continue monitoring the student.
    c. Refer the student for special education evaluation.

11. Mr. Baltas has a Tier II reading intervention in place for his student, Beth. The median score for the last 5 weeks of intervention is 90 wcpm. Typical peers are reading at 145 wcpm. What step might he take next with Beth's intervention?
    a. Call her parents and request a meeting.
    b. Call an expert (e.g., school psychologist) to develop a more intensive intervention.
    c. Reduce services and prepare for a special education evaluation.

12. Which of the following examples best represents RtI being done well?
    a. Mrs. Achenbach has a student in her class who is struggling a bit so she calls the parent to discuss a referral for a special education evaluation. Once evaluated, the student doesn't qualify so Mrs. Achenbach lets the next grade level teachers know about the student so that they can request an evaluation next year.
    b. Mr. Lund has some students who do well in his class and some students who struggle a bit. The students who are doing well do not receive any other supports, but the students who are struggling receive extra support from the intervention teacher. He also monitors their progress and ensures they are getting the instruction they need.
    c. Mr. Jackson, the school principal, meets with teachers weekly to discuss how students are progressing toward their academic achievement goals and what sorts of classroom management strategies are effective in the classroom. After the meetings, the teachers go back to their classrooms and help students as best they can given the resources they have in their classrooms.

Response-to-Intervention Survey

I.   Background Information:

Please place an "X" on the appropriate line for each question.

1. Have you heard of the Response-to-Intervention (RtI) process?
   ___ Yes
   ___ No

2. Have you heard of Multi-Tier Systems of Support (MTSS)?
   ___ Yes
   ___ No

3. Where did you learn about the RtI process?
   ___ Field Experience
   ___ Course (Please specify: _____)
   ___ Other (Please specify: _____)
   ___ Not applicable/I have not learned about the RtI process.

4. Where did you learn about MTSS?
   ___ Field Experience
   ___ Course (Please specify: _____)
   ___ Other (Please specify: _____)
   ___ Not applicable/I have not learned about MTSS.

II.   Implementation of RtI and/or MTSS

Please circle the number that best indicates your confidence in the following practices for all questions.

1. How confident are you in your ability to implement RtI and/or MTSS once you are in the field?

1	2	3	4	5
Not at all Confident	A little Confident	Somewhat Confident	Confident	Very Confident

2. How confident are you in being able to clearly explain RtI and/or MTSS to someone once you are in the field?

1	2	3	4	5
Not at all Confident	A little Confident	Somewhat Confident	Confident	Very Confident

3. How confident are you in being able to teach RtI and/or MTSS to someone once you are in the field?

1	2	3	4	5
Not at all Confident	A little Confident	Somewhat Confident	Confident	Very Confident

Thank you for your participation!