

## Assessing teachers' knowledge and attitudes toward implementing a response to intervention approach in the classroom

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### ABSTRACT

The aim of this study was to explore elementary school teachers' knowledge and attitudes about implementing the Response to Intervention (RTI) approach, which is a system used to identify and support students with learning disabilities or those who face learning difficulties. A total of 152 elementary school teachers participated in the survey, including 64 males and 88 females. Various statistical methods were applied to analyze the data, such as Cronbach's alpha, frequencies, percentages, four-way ANOVA, and Scheffe's post hoc test. The findings showed that teachers had a moderate level of knowledge about RTI and held neutral attitudes toward its implementation. The study also found no significant differences in responses based on gender, specialty, or the highest degree achieved. However, teachers with more than 10 years of experience showed different responses compared to those with less experience. Additionally, a positive link was found between teachers' knowledge of RTI and their attitudes toward its use. Based on these results, some recommendations are provided.

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### 1. Introduction

Response to Intervention (RTI) framework is an identification and support system for students with learning disabilities and those who struggle with their learning. Thus, the RTI system supports all learners in general classrooms and provides three levels of support based on student's needs by simultaneously monitoring students' progress with the intervention provided. Therefore, decision-making accrues based on students' academic performance toward the given interventions. As a result of the several advantages of the RTI system, this study aimed to assess teachers' knowledge and attitudes toward the implementation of the RTI system in Saudi Arabia. [Jimerson et al. \(2016\)](#) indicated the importance of implementing RTI for students with learning disabilities, as the tool is considered an early intervention through academic and behavioral support, as well as a means for teachers to predict students who may be at risk of learning disabilities.

RTI is an identification approach that serves two main functions, among others: (1) providing early intervention support for students who are struggling or at risk of school failure and (2) establishing valid assessment methods for identifying students qualified for different disability categories in special education services. It also prevents immediate referrals for special education services by providing different levels of support through effective interventions based on students' needs.


The use of the RTI framework as an identification system for assessing students suspected of disabilities has emerged as a response to the Individuals with Disabilities Education Act (IDEA), which designated the approach as a reaction to high-quality research-based interventions and instructions in 2004. IDEA also mandates that all states in the United States utilize the model as a substitution for the traditional model, which relies on the discrepancy between students academic achievement and their IQ test scores to identify students with learning disabilities ([Yell et al., 2006](#); [Al Otaiba et al., 2019](#); [Barrio et al., 2015](#)).

While RTI serves as a comprehensive prevention system that identifies instructional strategies based on students' educational needs, its successful implementation relies primarily on teachers' knowledge and competencies regarding the approach ([Alahmari, 2018](#); [Stanard et al., 2013](#)). Teachers engaged in the RTI process are required to

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conduct various types of assessments, analyze students' data, make decisions based on student's strengths and weaknesses, and develop evidence-based strategies to address diverse educational needs (Harn, 2017; Turse and Albrecht, 2015; Alageel and Aldogmee, 2016). These objectives underscore the necessity for teachers to acquire sufficient knowledge of the RTI approach.

Furthermore, successful implementation of the RTI model necessitates continuous collaboration between special and general education. This collaboration is essential for addressing students' needs, determining suitable instructional strategies, reviewing learning progress, and making informed decisions (Hamilton-Jones and Moore, 2013). According to Hamilton-Jones and Moore (2013), collaboration is "not just a task or an action, but an engagement style for professionals" (p. 158). Therefore, professionals engaged in RTI must develop a plan specifying their roles and responsibilities.

Therefore, assessing the knowledge of Saudi Arabian teachers regarding the RTI approach, especially given that the intellectual quotient (IQ)-achievement discrepancy formula remains the sole method for identifying students with learning disabilities in Saudi Arabia (Fuchs and Fuchs, 2006). This assessment aims to gauge Saudi Arabian teachers' readiness to adopt the RTI approach, aligning with developed countries in identifying students with suspected disabilities and reducing the number of students referred for special education services. Such investigations play a significant role in providing teachers with necessary professional development programs, enabling them to acquire the skills needed to address the needs of students with learning disabilities. Additionally, there is a limited number of Arabic studies related to RTI (Alageel and Aldogmee, 2016). To the best of the researchers' knowledge, no studies in Saudi Arabia have assessed teachers knowledge and attitudes toward the implementation of the RTI approach. Research questions are as follow:

1. To what extent do teachers perceive their knowledge of the RTI approach?
2. What attitudes do teachers hold toward the implementation of the RTI approach in their classrooms?
3. Are there significant differences in the teachers' knowledge of RTI based on teaching experience, gender, highest degree earned, and specialty?
4. Are there significant differences in teachers' attitudes toward the implementation of RTI based on teaching experience, gender, highest degree earned, and specialty?
5. Is there a positive relationship between teachers' knowledge and attitudes regarding the implementation of RTI in their classrooms?

This quantitative study was designed to explore teachers' knowledge and attitudes regarding the implementation of the RTI approach in elementary

schools in Riyadh, Saudi Arabia. The objectives included examining the potential impact of demographic variables, such as teaching experience, gender, highest degree earned, and specialty, on the participants' responses. Additionally, the study sought to uncover the relationship between teachers' knowledge and attitudes toward the implementation of the RTI approach. The investigation considered the possibility that a lack of knowledge among teachers might lead to a negative attitude, resulting in a reluctance to adopt the RTI approach.

Regardless of the government of Saudi Arabia's contribution toward the improvement in services that are provided for students with learning disabilities, there is still a lack of services that require intense training for teachers and administrators, especially when it comes to the RTI system. After the regulations of people with special needs development, there is a significant necessity to implement the ideal way to identify students with learning disabilities and the services provided to them in general education classrooms. Thus, RTI must be implemented as an identification and support system for these students. However, to this day, schools use traditional methods to identify students with learning disabilities. Schools determine disability through the discrepancy model, which refers to the achievement gap between students and their IQ scores. Therefore, there is a need for knowledgeable teachers and administrators of the RTI to display their knowledge of RTI implementation to support students in need (Aljohani, 2019).

One of the biggest challenges in successfully implementing RTI is the lack of knowledge among teachers about the approach (Burns et al., 2013; Stahnke et al., 2016). Therefore, understanding teachers' knowledge of RTI is critical to providing meaningful support for the efficient implementation of the approach (Stahnke et al., 2016). Further, it is crucial that teachers involved in the process of implementing RTI possess a general understanding of the multi-tiered approach. "The teachers' knowledge of RTI can help guide administrators and professional development personnel as they plan for future training and implementation of new procedures" (Stanard et al., 2013).

This study makes a significant contribution to the literature on teachers knowledge and attitudes toward the implementation of the RTI approach. The examination focused on four key aspects: (1) teachers' knowledge of RTI, (2) teachers' attitudes toward its implementation, (3) potential influences of certain demographic variables on the participants' responses, and (4) the relationship between teachers' knowledge and attitudes toward the implementation of the RTI approach. The findings not only contribute to addressing existing gaps in the literature but also offer valuable insights that may inform policymakers' decisions on RTI reform to better support teachers. Furthermore, the current study aligns with calls for intensive support, training,

and additional coaching tailored to teachers' needs to ensure the efficient implementation of RTI (Castro-Villarreal et al., 2014).

In addition, the researchers offer recommendations to the Saudi Ministry of Education for improving RTI practices in schools. These findings provide critical information to be considered when planning professional development programs, aiming for optimal implementation and maximizing the benefits of the RTI approach. Furthermore, by assessing various variables, the study provides foundational information that could support the design of interventions that aim to improve the knowledge and attitudes of teachers toward RTI multi-tiered systems. This study also contributes to the call to conduct further studies focused particularly on teachers knowledge of RTI. For instance, Alahmari (2018) indicated that more studies should be conducted in countries other than the USA to discover teachers' knowledge about the RTI approach.

## 2. Literature review

### 2.1. Response to intervention

Numerous definitions of RTI have emerged in the literature. However, one of the most comprehensive definitions comes from the RTI Action Network, a program of the National Center for Learning Disabilities. RTI is defined as a multi-tiered approach to the early identification and support of students with learning and behavior needs. The RTI process begins with high-quality instruction and universal screening of all children in the general education classroom. Furthermore, the National Center on Intensive Intervention defines RTI as a systematic framework of support that implements high-quality instruction followed by countless assessments to meet the needs of all students. It starts with screening for all learners, utilizes a multi-tiered system of support, and incorporates progress monitoring and data-based decision-making. RTI is described as an assessment and intervention model (Brown-Chidsey and Steege, 2011) and as a service delivery system by Wilber (2016).

The IDEA was passed in 2004 to mandate schools to provide high-quality instruction to meet the needs of students with special needs, emphasizing the use of the RTI framework (Fuchs and Fuchs, 2006). Additionally, IDEA stipulates that students with special needs be taught by highly qualified teachers (Zirkel, 2017). This aspect is significant in the context of learning disabilities, where the traditional discrepancy model, based on the gap between a student's academic performance and IQ test results, previously identified students. However, this model allowed students to struggle for extended periods without the necessary support. IDEA enables schools to employ both models, including the discrepancy and RTI models, to identify students in need of special education services (Murawski and Hughes, 2009). This approach reduces incorrect referrals to

special education services and improves educational instruction provided by special education specialists. While RTI is sometimes considered an intervention system solely for academically struggling students, it also supports unidentified students, those at risk, those with behavioral problems, and those who do not qualify for special education services (Saeki et al., 2011). Recognizing that many students may face challenges in essential skills like reading, math, and writing, early detection of these weaknesses is crucial for improving student achievements. Therefore, the RTI framework has been selected to address students' academic issues through three tiers of support.

The RTI model typically comprises three levels through which a student progresses based on a comprehensive assessment of responses to educational interventions. The decision to move a student through these levels is not arbitrary; instead, it is data-driven and evidence-based. Teaching practices vary across the levels of the RTI model. At the first level, teaching is designed to benefit all students and is delivered by the general education teacher. In contrast, teaching at the second and third levels of the model is informed by scientific research in the field and is provided by specialized teachers.

### 2.2. Advantages of RTI

Several advantages have been reported in the use of the RTI model. One of the main benefits is the early identification of students with learning disabilities or those at risk of academic failure. This helps limit the increase in the number of students referred to resource rooms and prevents the escalation of behavioral or academic problems to severe disabilities. Achieving this involves using effective teaching methods tailored to the student's characteristics and abilities for optimal learning. Additionally, the RTI model aims to prevent academic failure or delays in acquiring the skills necessary for subsequent academic stages. The most important advantages of the intervention response model include (a) early identification of problems facing students, involving them in prevention programs from the onset of the problem to prevent aggravation, (b) referring students who couldn't benefit from the educational interventions provided in the general classroom to special education services, specifically designed to meet their needs; (c) ensuring students master basic skills for subsequent stages before progressing, and (d) addressing the individual needs of students, which plays a crucial role in accelerating their success.

Adopting the RTI model serves to safeguard students from inaccurate diagnoses and diminishes the surge in referrals to special education programs. Furthermore, it contributes to enhancing educational outcomes and addressing academic problems before they escalate, offering early intervention for students at risk of academic failure. Additionally, the RTI model ensures that all students receive high-quality teaching in general education classes.

Furthermore, RTI plays a vital role in helping schools allocate their services to the students who need them most, exhaustively exploring all educational options before resorting to referrals to special education programs. The adoption of the intervention response model facilitates continuous monitoring of students' progress while delivering educational interventions in general education classes. Additionally, it provides valuable data to both general education teachers and teachers working with students experiencing learning disabilities, offering insights into educational practices that may not have been effective. This information allows for the exploration of alternative practices when students are referred to resource rooms."

While the RTI model has received accolades, it has also faced criticism. One aspect of criticism involves the necessity for conducting professional development for teachers and equipping them with the skills required for educational interventions at various levels of the model. Additionally, there are concerns related to effectively monitoring students' progress to ensure that interventions align with their needs. Other criticisms encompass challenges in providing sufficient time and tools for the model's implementation. Some argue that the methods employed in the RTI model are technically insufficient to make decisions regarding student referrals to learning disabilities programs (Zhang and Epley, 2012).

Twyman and Tindal (2007) highlighted that the application of the RTI model requires both research and practical efforts to enhance the educational field. To achieve the desired objectives of the intervention response model, several fundamental requirements are essential. Firstly, the use of RTI in general education should be refined by training general education teachers in modern methods that consider individual differences and variations among students in the same class. Teachers who seek renewal and development significantly contribute to the successful application of the intervention response model. Secondly, it is crucial to establish and standardize criteria based on the general curriculum, along with references for basic skills, to measure a student's progress toward achieving goals and determine responsiveness. Thirdly, a qualified RTI implementation team, comprised of administrators at the school and education administration levels, general education teachers, teachers of learning disabilities, the child's family, the intervention response program coordinator, and specialists in reading and speech problems, should exhibit a desire for training and development, along with positive attitudes toward applying the intervention response model." Research indicates that RTI not only enables teachers to gain a better understanding of their students' needs and serve them accordingly but also fosters improved communication among school personnel. It elevates the communication level, enabling them to compare and interpret students' processes through the collected data (Al Otaiba et al.,

2019). Therefore, professional development is deemed essential for better serving students through RTI.

### 2.3. Teachers' knowledge and attitudes toward the implementation of RTI

The success of RTI depends on teachers' knowledge, which pertains to the RTI framework and its implementation, as teachers are the primary responders to struggling learners in classrooms (Al Otaiba et al., 2019). Spear-Swerling and Cheesman (2012) indicated that teachers possess a general understanding of RTI and its elements. However, teachers expressed less confidence in data interpretation and decision-making related to identifying students at risk. The researchers also noted that teachers were familiar with the three tiers of RTI but lacked knowledge about interventions and research-based instructions. Scholars have emphasized the necessity of professional development to equip teachers with sufficient background information about RTI. Vujnovic et al. (2014) found that less than 50% of teachers and school psychologists in their sample were unfamiliar with the appropriate RTI tier for each student or identifying students who needed RTI interventions and support. Sanger et al. (2012) highlighted that teachers lack formal training in RTI, a gap that needs to be filled by experts in the subject. Ongoing training is essential for successful integration and to enhance teachers' knowledge. Knowledge sharing among RTI members is crucial to determine each member's role and how they can support others, fostering a circle of trust that includes counselors, special education teachers, general education teachers, school principals, etc.

Burns and Gibbons (2011) identified the level of knowledge among teachers with learning disabilities about the RTI model in the diagnostic process, along with the level of their attitudes toward its application. The authors found that the respondents had a high level of knowledge about the RTI model in general. Teachers confirmed that parental involvement was considered one of the important components of the RTI model, which focuses on providing high-quality education based on research results and academic and behavioral interventions for all students in public education. The intensity of interventions provided through the model increases as the student progresses from one level to the next. The study also revealed that teachers had limited knowledge that the RTI model emphasizes measuring students' progress, provides opportunities for frequent evaluation of teaching effectiveness, and modifies the curriculum to suit the characteristics and needs of individuals with learning disabilities. The results further indicated that the respondents believed in the potential benefits of the RTI model and its positive impact on improving academic and behavioral outcomes for all students. At the very least, they acknowledged that the model could predict students at risk of learning

disabilities. Simultaneously, Skaar et al. (2022) conducted a study to assess the teachers' knowledge of RTI and its implementation. The study participants were 214 teachers. Only 7% of the sample were confident in their knowledge and ability to implement RTI in their classrooms. Additionally, some of the participants indicated their limited knowledge of some concepts related to RTI, and others indicated that they had never heard of them. Furthermore, Sande (2022) investigated teachers' and administrators' knowledge and how it is implemented in the classrooms. The findings showed that the faculties who had longer working experience had some knowledge of RTI. However, others had a limited supply of knowledge, and some had never heard of it. This means there were some institutions that did not incorporate RTI in teachers' preparation programs. And that is what caused the lack of knowledge.

Teachers' attitudes play a crucial role in the efficient implementation of RTI. In a study by Bahr et al. (2017), teachers' attitudes, self-efficacy, and burnout toward RTI implementation in high schools were explored. The findings revealed a mix of both negative and positive attitudes toward RTI. Interestingly, teachers with positive attitudes toward RTI experienced a high level of burnout, stemming from their dedicated efforts to implement it effectively. Additionally, teachers with low self-efficacy reported higher levels of emotional stress, while those with a high level of self-efficacy tended to experience a greater sense of achievement. The study highlighted the importance of administrative support in schools, emphasizing the need for additional training with clear instructions and designated time for RTI implementation. Furthermore, the study recommended school psychologists' support to mitigate the impact of stress on teachers and provide the necessary additional support they need.

Al-Otaibi and Mansour (2021) examined the obstacles to the implementation of the RTI model from the perspective of teachers working with students with learning disabilities in primary schools in Jubail. The study also investigated differences among teachers with learning disabilities based on variables such as gender and years of experience regarding the obstacles they faced in applying the RTI model. The results highlighted that the most significant obstacle, as perceived by teachers with learning disabilities, in the dimension of teacher preparation was a lack of knowledge on how to apply the RTI model. In the school curriculum dimension, a notable challenge was monitoring progress, an essential practice for evaluating students' academic performance. In the educational environment dimension, teachers expressed concerns about the absence of standardized measures based on the curriculum to aid in evaluating students within the RTI model.

The study revealed statistically significant differences among teachers of students with learning disabilities in primary schools concerning the

obstacles they encountered in applying RTI, with a preference for females. Additionally, there were statistically significant differences in teachers' responses based on the number of years of experience, favoring those with more experience. In a related study, Zhang and Epley (2012) found a deficiency in teachers' knowledge of the strategy used in applying RTI for students with learning disabilities in their sample. Furthermore, the study indicated differences in arithmetic means based on the variable of experience, but no statistically significant differences were observed based on gender.

Hampton (2020) conducted a study aimed at uncovering teachers' perceptions regarding the implementation of the RTI model in secondary schools. The objective was to assist teachers and administrators in understanding the professional development training, support, and resources needed for effective model implementation. The findings underscored the demand for additional data in the areas of differentiating instruction, progress monitoring, and making data-driven decisions. The goals of the professional development project were designed to address the learning needs of educators, aiming to enhance the accuracy of implementing the RTI framework and subsequently increase student achievement.

Crucially, the success of RTI necessitates collaboration not only between teachers and administrators but also among all school personnel. Since there is no universal method for integrating RTI into schools, collaboration is imperative among school staff to integrate RTI appropriately according to the school setting (Harn et al., 2011). Collaboration and teamwork play a vital role in benefiting students in need and achieving RTI goals.

### 3. Methodology

This study employed a descriptive, nonexperimental quantitative research design to address the research questions, utilizing a survey for data collection.

#### 3.1. Independent variables

1. Teaching Experience: Teachers with experience ranging from 5 years or less to more than 15 years were included.
2. Gender: Both male and female teachers were included.
3. Specialty: Both elementary special education teachers and elementary general education teachers were included.
4. Highest Degree Earned: Teachers holding either bachelor's or master's degrees were included.

#### 3.2. Dependent variables

1. Knowledge of RTI: This assesses teachers' knowledge levels regarding the RTI approach.

2. Attitude toward the Implementation of RTI: This measures teachers' attitudes toward the implementation of RTI.

### 3.3. Sample

The sample for this study comprised 152 elementary school teachers employed in public elementary schools in Riyadh City, Saudi Arabia. Participants were selected using the gatekeeper sample technique, which, according to Lamprianou (2022), yielded the same responses as the random sampling technique.

In this study, the Director of Education for the Riyadh region acted as the gatekeeper. After receiving the necessary approvals from the Scientific Research Ethics Committee at Majmaah University, an official letter was sent through the department responsible for education to the Director of Education. The letter aimed to facilitate the researchers' work. Given their authority and willingness to assist with participant recruitment, the Director of Education granted access to all potential participants working in elementary schools in Riyadh. This enabled the researchers to distribute the survey electronically to all possible participants.

The participants' profiles are presented in Table 1. The study included 42.1% male teachers (N = 64) and 57.9% female teachers (N = 88). In terms of teaching experience, 14.5% of teachers (N = 22) had 5 years or less, 34.2% (N = 52) had between 6 and 10 years, and 51.3% (N = 78) had more than 10 years of experience. Special education teachers made up 34.9% of the sample (N = 53), while 65.1% (N = 99) were general education teachers. Most teachers held bachelor's degrees (83.6%, N = 127), with the remaining 16.4% (N = 25) holding master's degrees.

**Table 1:** Frequencies and percentage of participants according to variables

Variable	Categories	Frequency	Percent%
Gender	Male	64	42.1
	Female	88	57.9
	Total	152	100.0
Years of teaching experience	5 years or less	22	14.5
	6-10 years	52	34.2
	More than 10 years	78	51.3
	Total	152	100.0
Specialty	Special education teacher	53	34.9
	General education teacher	99	65.1
	Total	152	100.0
Highest degree earned	Bachelor	127	83.6
	Master	25	16.4
	Total	152	100.0

### 3.4. Instrumentation

The survey designed for this study comprised three sections. The first section collected demographic information, including the number of years of teaching experience, gender, specialty, and highest degree earned. The second section consisted of 18 items aimed at exploring participants' knowledge of the RTI approach. The third section

included 14 items to gather information about participants' attitudes toward the implementation of RTI in their classrooms. Survey items were adapted and extended from two research surveys developed by Hogle (2018) and Wilber (2016). Additionally, some items were incorporated based on a comprehensive review of the relevant literature (Jimerson et al., 2016; Al Otaiba et al., 2019).

The teachers responded to the survey items using a five-point Likert scale (strongly agree, agree, neutral, disagree, and strongly disagree), with the following coding: strongly agree = 5, agree = 4, neutral = 3, disagree = 2, and strongly disagree = 1. A pilot study with 30 teachers was conducted to collect feedback on the survey's length, ease of understanding, language, and content validity. Minor modifications were implemented to the items based on the pilot study feedback. Participants in the pilot study were excluded from the final survey. The survey and consent form were electronically distributed to all teachers through the General Administration of Education in Riyadh, and teachers were given three weeks to respond.

### 3.5. Judgment standard

Means and standard deviations were calculated for each construct and related items. Subsequently, items were ranked in descending order based on the following scale: less than 2.34, low; 2.34-3.67, moderate; 3.68-5.00, high.

### 3.6. Reliability and validity

Cronbach's alpha coefficient was computed to assess the scale's reliability using pilot data (N = 30). The results indicated a very good level of reliability for the overall scale (0.884), as well as for the two subscales: teachers' knowledge of RTI (0.862) and teachers' attitudes toward the implementation of RTI (0.878) (Table 2).

**Table 2:** Cronbach's alpha coefficient for the study tool items

	N	Cronbach's alpha
Knowledge of RTI	18	0.862
Teachers' attitudes toward the implementation of RTI	14	0.878
Overall	32	0.884

The validity of the scale was assessed using two methods. Firstly, the content validity was examined by sending the items to six specialists with a PhD in special education to evaluate the clarity of the items and their relevance to the two variables in this study. All comments provided by the specialists were considered in the final draft of the scale. Secondly, the construct validity of the scale was tested using a Pearson correlation coefficient. The results indicated a good level of validity, ranging between 0.526\*\* and 0.793\*\* for knowledge of the RTI and between 0.504\*\* and 0.799\*\* for teachers' attitudes toward the implementation of the RTI.

### 3.7. Delimitation of the study

Some delimitations were established for the current study. Firstly, the participants were limited to elementary school teachers. Secondly, the survey was restricted to teachers in general or special education classes, focusing on personnel most likely to be involved in the RTI process. General education teachers were included because the implementation of the RTI approach occurs in general classes, where they play a crucial role in screening all students, modifying instruction through multiple tiers, monitoring progress, and making decisions about struggling students. Additionally, most RTI practices are emphasized at the elementary level, underscoring the importance of providing at-risk students with early intervention to prevent further struggles.

### 4. Results

The survey data addressed the first research question: To what extent do teachers perceive their knowledge of the RTI approach? Descriptive statistics, including means and standard deviations, were utilized to determine the participants' level of knowledge about the RTI approach.

Table 3 displays the means and standard deviations for teachers' knowledge of the RTI approach. Among the rated items, 'I know how to group students by their needs' (Item 7) achieved the highest mean value, indicating a moderate level, with a mean of 3.26. Conversely, 'I know the rationale behind RTI' (Item 15) secured the lowest mean at 2.83 and was ranked last. The overall variable was rated at a mean of 2.98, suggesting a moderate level of teachers' knowledge regarding RTI.

**Table 3:** Means and standard deviations of the variable knowledgeable about the RTI approach

#	Item	Mean	Standard deviation	Rank	Importance level
7	I know how to group students by their needs	3.26	1.34	1	Moderate
2	I know that RTI uses a multi-tiered system of instruction and intervention	3.11	1.21	2	Moderate
3	I know the process of teaching struggling students in each Tier of instruction	3.10	1.24	3	Moderate
6	I can develop my own reasons for why some students are not achieving desired levels in reading	3.10	1.33	3	Moderate
13	I know how to analyze data from progress monitoring assessments to determine if students are responding to the intervention or need further academic support	3.03	1.25	5	Moderate
16	I know how differentiated instructional strategies should be applied to struggling students	3.03	1.24	5	Moderate
5	I know how a universal screener is used to identify students at risk for academic difficulties	3.00	1.32	7	Moderate
11	I know how often students' progress should be monitored	2.99	1.35	8	Moderate
18	I know the purpose of having an RTI team	2.95	1.29	9	Moderate
1	I know the rationale behind RTI	2.94	1.25	9	Moderate
4	I know that RTI is an integrated approach between general and special education	2.94	1.25	9	Moderate
17	I know how time should be effectively managed for all students, including those in RTI	2.94	1.41	12	Moderate
14	I know how to modify the intervention plans based on students' responses to the intervention	2.93	1.28	13	Moderate
12	I know how often data should be collected to document and monitor students' progress	2.92	1.32	14	Moderate
8	I know how to select the appropriate evidence-based interventions to match the students' needs	2.91	1.35	15	Moderate
9	I know how frequent and intensive the intervention should be at each tier	2.88	1.28	16	Moderate
10	I can explain the five essential components of effective reading instruction	2.86	1.31	17	Moderate
15	I know how to use RTI data to make recommendations for a special education evaluation	2.83	1.35	18	Moderate
-	Overall	2.98	1.06	-	Moderate

Second research question: What attitudes do teachers hold toward the implementation of the RTI approach in their classrooms? Descriptive statistics were utilized to determine the means and standard deviations of teachers' attitudes regarding the implementation of RTI.

Table 4 presents the means and standard deviations for teachers' attitudes toward the implementation of RTI. Item 6, 'RTI requires more collaboration with other school personnel,' achieved the highest mean value, indicating a moderate level, with a mean of 3.24. Conversely, items 12 and 3, 'I adopt a positive attitude toward RTI' and 'I would use RTI because it aligns with my beliefs/philosophies on supporting students with learning disabilities,' were ranked last with a mean of 2.95. The overall variable had a mean of 3.08, suggesting a neutral attitude toward the implementation of RTI. To answer research question 3 - Are there significant differences in the teachers' knowledge of RTI based on teaching experience, gender, highest degree earned, and specialty? — means and standard deviations were calculated, as shown in Table 5. Table 5 shows an apparent

variance in the means and standard deviations for knowledge of RTI according to their teaching experience, gender, and highest degree earned. The results revealed statistically significant differences between the means based on a three-way analysis of variance (ANOVA), as shown in Table 6.

Table 6 shows that there were no statistically significant differences in the knowledge of RTI according to the three variables: gender, specialty, and highest degree earned. However, there were statistically significant differences in the knowledge of RTI according to years of teaching experience.

Table 7 shows Scheffe's post hoc test, indicating statistically significant differences based on years of teaching experience.

Table 7 illustrates variations in teachers' knowledge of RTI based on their teaching experience. Significantly higher mean values were observed for those with more than 10 years of experience compared to those with 5 years or less and those with 6–10 years of teaching experience. The difference in the mean value between teachers who had more than 10 years of teaching experience and those with 6–10 years of teaching experience

was significant in favor of those who had more than 10 years of teaching experience.

In response to research question 4: Are there significant differences in teachers' attitudes toward the implementation of RTI based on teaching

experience, gender, highest degree earned, and specialty? —means and standard deviations of teachers' attitudes toward the implementation of RTI according to the variables were calculated, as shown in Table 8.

**Table 4:** Means and standard deviations of teachers' attitudes toward the implementation of RTI

#	Item	Mean	Standard deviation	Rank	Importance level
6	RTI requires more collaboration with other school personnel	3.24	1.32	1	Moderate
2	I believe that RTI is too intrusive for most regular education classrooms	3.19	1.18	2	Moderate
13	I can meet my students' needs with RTI tiers	3.16	1.19	3	Moderate
14	Using the RTI model requires a lot of time	3.13	1.34	4	Moderate
7	I am ready to collaborate with other teachers to make RTI more efficient	3.12	1.35	5	Moderate
5	RTI can improve student achievement	3.10	1.44	6	Moderate
9	I am ready to provide individualized interventions to students	3.09	1.29	7	Moderate
4	I find the amount of time to implement RTI to be acceptable	3.09	1.21	7	Moderate
10	I am ready to give students appropriate time to absorb the content	3.08	1.39	9	Moderate
8	I am ready to find the time to plan and prepare for RTI requirements	3.03	1.38	10	Moderate
1	I would be motivated to implement RTI with students	2.99	1.37	11	Moderate
11	I believe the RTI model assists some students to succeed without the need for special education services	2.99	1.24	11	Moderate
12	I adopt a positive attitude toward RTI	2.95	1.17	13	Moderate
3	I would use RTI because it aligns with my beliefs/philosophies on supporting students with learning disabilities	2.95	1.29	13	Moderate
-	Overall	3.08	1.06	-	Moderate

**Table 5:** Means and standard deviations of knowledge of RTI according to teaching experience, gender, highest degree earned, and specialty

Variable	Category	N	Mean	Standard deviations
Gender	Male	64	3.18	1.04
	Female	88	2.84	1.05
Years of teaching experience	5 years or less	22	2.25	0.52
	6-10 years	52	2.45	0.90
	More than 10 years	78	3.55	0.95
Specialty	Special education teacher	53	2.69	1.04
	General education teacher	99	3.14	1.04
Highest degree earned	Bachelor	125	2.99	1.06
	Master	7	2.93	1.04

**Table 6:** Three-way ANOVA results for knowledge of RTI based on teaching experience, gender, specialty, and highest degree earned

Source	Type IV sum of squares	df	Mean square	F	Sig.
Gender	0.854	1	0.854	1.086	0.299
Years of teaching experience	42.453	2	21.227	26.995	0.000
Specialty	0.779	1	0.779	0.991	0.321
Highest degree earned	0.085	1	0.085	0.108	0.743
Error	114.803	146	0.786		
Corrected total	168.638	151			

**Table 7:** Scheffe's test for differences in teachers' knowledge based on teaching experience

Teaching experience	Mean	6-10 years	More than 10 years
5 years or less	2.18	0.617	0.000
6-10 years	2.39	-	0.000
More than 10 years	3.42	-	-

**Table 8:** Means and standard deviations of teachers' attitudes toward the implementation of RTI according to their teaching experience, gender, highest degree earned, and specialty

Variables	Category	N	Mean	Standard deviation
Gender	Male	64	3.36	1.01
	Female	88	2.90	1.06
Years of teaching experience	5 years or less	22	2.19	0.56
	6-10 years	52	2.47	0.84
	More than 10 years	78	3.77	0.83
Specialty	Special education teacher	53	2.74	1.01
	General education teacher	99	3.28	1.03
Highest degree earned	Bachelor	127	3.09	1.07
	Master	25	3.13	1.01

Table 8 shows an apparent variance in the means and standard deviations for teachers' attitudes toward the implementation of RTI according to the variables, their teaching experience, gender, highest degree earned, and specialty. A four-way ANOVA analysis of variance was used to show the significance of the statistical differences between the

means, as shown in Table 9. Table 9 shows that there were no statistically significant differences in teachers' attitudes toward the implementation of RTI according to the variable gender, highest degree earned, and specialty. However, the results showed statistically significant differences in teachers' attitudes toward the implementation of RTI



according to their years of teaching experience. Table 10 presents Scheffe's post hoc test, which showed a statistically significant difference in teachers' attitudes based on their teaching

experience. There were no significant differences according to years of teaching experience in the domains of teachers' attitudes toward the implementation of RTI.

**Table 9:** Four-way ANOVA for teachers' attitudes toward the implementation of RTI based on the variables

Source	Type IV Sum of squares	df	Mean square	F	Sig.
Gender	0.631	1	0.631	0.994	0.320
Years of teaching experience	57.476	2	28.738	45.257	0.000
Specialty	1.507	1	1.507	2.374	0.126
Highest degree earned	0.015	1	0.015	0.024	0.877
Error	92.710	146	0.635		
Corrected total	147.890	151			

**Table 10:** Scheffe's test teachers' attitudes toward the implementation of RTI

Preschool type	Mean	6-10 years	More than 10 years
5 years or less	2.19	0.385	0.000
6-10 years	2.47	-	0.000
More than 10 years	3.77	-	-

Table 10 shows differences in teachers' attitudes toward the implementation of the RTI. There was a significant difference in the mean value between those with 5 years or less of teaching experience and those with more than 10 years. Additionally, there was a significant difference in the mean value between those with more than 10 years of teaching experience and those with 6-10 years in favor of the former. The study addressed research question 5: Is there a positive relationship between teachers' knowledge and attitudes toward the implementation of RTI in their classrooms? —by conducting a Pearson correlation, as shown in Table 11. Table 11 shows a positive relationship between teachers' knowledge and attitudes toward the implementation of RTI in their classrooms. The value of that correlation was 0.862\*\*. The results clearly showed that teachers who have more knowledge of RTI adopt a positive attitude toward the implementation of RTI in their classrooms.

**5. Discussion**

The purpose of this study was to investigate teachers' knowledge and attitudes toward the implementation of RTI in their classrooms. Additionally, it sought to evaluate the impact of various variables on the teachers' responses and uncover the relationship between teachers' knowledge and attitudes toward the implementation of RTI in the classrooms.

**5.1. Teachers' knowledge of RTI**

The findings pertaining to the first research question, which investigated teachers' knowledge of RTI, indicate that a significant portion of the participating teachers reported possessing a moderate level of knowledge regarding RTI. The

researchers suggest that this outcome may be attributed to the relatively recent introduction of the RTI concept in Saudi Arabia. Given the novelty of RTI, it is not surprising that teachers may not have acquired an extensive understanding of it. This underscores the importance of focusing on initiatives aimed at enhancing teachers' knowledge of RTI in the context of Saudi Arabian education.

**5.2. Teachers' attitudes toward the implementation of RTI**

The second research question sought to investigate teachers' attitudes regarding the implementation of RTI in their classrooms. According to the survey results of this study, most participants adopted a neutral attitude toward the implementation of RTI in their classrooms. This aligns with the findings from the first research question, suggesting a correlation between moderate knowledge levels of RTI and a neutral attitude toward its implementation. The results underscore the impact of teachers' knowledge on their willingness to embrace and implement RTI, emphasizing the need for initiatives geared toward enhancing teachers' understanding before addressing attitudes and implementation.

**5.3. Impact of demographics on teachers' RTI knowledge and attitudes**

The study's results indicate that the independent variables (gender, highest degree earned, and specialty) did not influence the teachers' knowledge of RTI or their attitudes toward the implementation of RTI in the classrooms. However, teaching experience emerged as a significant factor impacting both teachers' knowledge of RTI and their attitudes toward its implementation. Specifically, teachers with more than 10 years of teaching experience demonstrated higher levels of knowledge about RTI and more positive attitudes toward its implementation compared to those with less experience.

**Table 11:** Pearson correlation between teachers' knowledge and attitudes toward the implementation of RTI in their classrooms

		Teachers' attitude toward the implementation of RTI
Knowledge of RTI	Pearson Correlation	.862**
	Sig. (2-tailed)	.000

\*\* : significance at the 0.01 level

This finding suggests that teachers with longer teaching tenures may have had more opportunities to engage in workshops, training programs, and professional development activities that contributed to their knowledge and positive attitudes regarding RTI. Additionally, experienced teachers might exhibit a greater interest in staying informed about educational advancements and attending specialized training programs tailored to address diverse student needs. The observed positive correlation between teaching experience, knowledge of RTI, and positive attitudes toward its implementation aligns with the notion that teachers' expertise tends to grow over the years of professional practice.

#### **5.4. The relationship between teachers' knowledge and their attitudes toward the implementation of RTI**

The findings of this study indicate a positive relationship between teachers' knowledge of RTI and their attitudes toward the implementation of RTI. This implies that as teachers acquire more knowledge about RTI, their attitudes become more positive toward its application. This correlation is logical, as a lack of knowledge about any educational strategy can lead to reluctance or hesitation in its implementation. In essence, a deficiency in understanding RTI may contribute to teachers lacking confidence in their ability to effectively apply it.

#### **6. Conclusion**

The study reinforces the understanding that RTI is a systematic framework involving high-quality instruction, universal screening, a multi-tiered system of support, and data-driven decision-making to meet the diverse needs of all students (NCRI, 2010). The findings underscore the importance of focusing on enhancing teachers' knowledge of RTI, as this improvement can positively impact their attitudes toward implementing this valuable tool in their classrooms.

#### **7. Recommendations and future studies**

1. This study adopts a quantitative approach, suggesting that future research could explore teachers' knowledge of RTI and their attitudes through alternative methodologies, such as qualitative methods, to provide a more comprehensive understanding.
2. Continuous assessment and improvement of teachers' knowledge of RTI are recommended, accompanied by effective training methods. Emphasis should be placed on assisting teachers in transitioning from acquiring knowledge to practical application.
3. The study's focus on one city in the Kingdom of Saudi Arabia suggests a potential for future research to extend the investigation to other cities,

allowing for a more diverse and comprehensive analysis.

4. Future studies could delve into strategies for enhancing teachers' knowledge and attitudes related to RTI, providing valuable insights into effective interventions.
5. Exploring the impact of additional variables, such as training on RTI and the support received from school teams, on teachers' knowledge and attitudes could be a fruitful avenue for future research.
6. Extending the research scope to include secondary and preparatory schoolteachers would offer a broader perspective on teachers' knowledge and attitudes regarding RTI across different educational levels.
7. Decision-makers and stakeholders are encouraged to prioritize teachers' professional development by implementing in-service training programs and workshops specifically designed to enhance their knowledge of RTI.

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#### **Compliance with ethical standards**

#### **Ethical considerations**

Informed consent was obtained, and participants' confidentiality was protected. The study was approved by the relevant ethics committee.

#### **Conflict of interest**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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