ESSENTIAL ELEMENTS FOR THE IMPLEMENTATION OF A RESPONSE TO INTERVENTION FRAMEWORK IN SECONDARY SCHOOL SETTINGS
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Abstract

As a means to achieve success in school and function in society, at-risk secondary school learners must have access to a system of supports that allows them the opportunity to maximize their potential. The purpose of this document is to explore the essential components of a Response to Intervention framework that allow for effective implementation in secondary schools. The first challenge for full RTI implementation in secondary schools is overlaying the model on the traditional secondary school structure. The second challenge is how to modify RTI components to best meet the needs of adolescent learners. This review outlined four components that have been found to be essential at all levels: leadership, professional development, data and assessment, and research based instruction and intervention.
Chapter I: Introduction

Schools are complex organizations filled with students who exhibit varying levels of achievement and diverse areas of need. The challenge schools face is how to best utilize the limited resources they have to help all students work toward ever increasing levels of proficiency. A systemic framework is needed to provide an integrated approach to service delivery at all levels. The purpose of this document is to explore the use of a Response to Intervention model and identify critical factors for implementation at the secondary school level.

Background

Although it was developed over a century ago in the behavioral tradition of psychology, Response to Intervention is a relatively new element in our nation’s schools. According to the Individuals with Disabilities Education Act (IDEA) of 2004, a discrepancy based system must be discarded in favor of adopting a process that determines if the child responds to scientific, research-based instruction. Further, according to the No Child Left Behind (NCLB) Act, instruction must be provided so that all children can reach, at a minimum, proficiency on challenging state academic standards and state academic assessments. Response to Intervention, hereafter referred to as RTI, effectively allows schools to meet these legislative requirements. RTI is an assessment and intervention process for systematically monitoring student progress and making decisions about the need for instructional modifications or increasingly intensified services using progress monitoring data (Johnson, Mellard, Fuchs, & McKnight, 2006). It provides a framework for problem solving and organizing instructional resources to proactively and prescriptively address the needs of struggling students rather than waiting for them to fail. Because the focus is on helping all students meet standards for success and avoiding labeling of
students as deficient, RTI has great popular appeal. Its capacity to improve results for students and drive systemic change also makes it a popular approach among educators.

Statement of Problem

We live in an era of accountability. Schools are judged and ranked by multiple metrics related to student outcomes. Under the New Michigan School Reform Law 2009 (PA 205 Section 1249), educators are directly responsible for student learning and are judged as effective or ineffective in evaluations based in large part on student achievement. It is even proposed by Michigan’s current governor that incentives in school funding may become linked to improved student performance on assessments of math and reading (http://msbo.org/services/biz/2013SchAid/2013SchAid.shtml). If educators peel away the various layers of local, state, and federal mandates that may spur us to look for a new model of service delivery, we are left with the idea that the core mission of every school should be to provide every student with the skills and knowledge to be a self-sufficient adult. Success in school is more important than ever for students who will compete in a global economy and are expected to possess 21st century skills that will allow them to succeed in postsecondary education and the workplace (Wagner, 2008). In contrast, students who fail in school are at greater risk of poverty, welfare dependency, incarceration, and early death (Monrad, 2007). In a high stakes environment such as this, it is of the utmost importance that educators support the learning of all students to high levels of achievement. If the research shows that Response to Intervention (RTI) is our best hope for giving every student the additional time and support needed to learn at high levels, it is essential that it be utilized as an instructional framework at all grade levels. A large quantity of research has been conducted to make recommendations for RTI implementation at the elementary school level (Hughes & Dexter, 2011). Due to the differing nature of elementary programs versus the
structure of middle and high schools, the recommendations arising from this research are not necessarily transferable. It is necessary to address the gap in the literature and make recommendations for RTI implementation and descriptions of model programs at the secondary level easily accessible.

**Research Question:**

What are the essential characteristics of a Response to Intervention framework as an effective instructional model for secondary schools as measured by improved student achievement?

This review of literature briefly outlines the core principles and features of an RTI model, describes effective implementation at the elementary level, reviews research and commentary on the proposed adjustments that would need to be made to implement an RTI model at the secondary level, and examines successful secondary level intervention programs for overlapping characteristics with an RTI model. A model for secondary school level RTI implementation is then proposed along with recommendations for future research and evaluation work necessary to better address the implementation of a Response to Intervention framework in secondary schools.

**Theoretical Framework**

Response to Intervention is not a product or program to be purchased. It is a dynamic problem-solving process built upon a foundation of intertwined and interacting core principles (NASDE, 2005; Johnson, Mellard, Fuchs, & McKnight, 2006; Heinzelman & LaPointe, 2007). While all RTI models are not identical in approach, all effective RTI practices are built upon a set of common beliefs.
• **We can effectively teach all children.** Response to Intervention is a radical departure from the way schools have functioned for centuries. In the past, it was common to blame lack of student progress on external factors such as home environment, lack of funding, society, or the child’s innate abilities. To embrace the essential principle that we can reach and teach every child requires a paradigm shift that may be slow to come in some school districts; however, this philosophy is a driving force for the work that must be done to implement an RTI model. The formation of a team of committed, focused, and motivated staff is one of the first steps. The team then sets goals for improvement and implementation, audits current practices and programs against the available research, and develops a plan for implementation. Ongoing implementation and sustained systemic change become the focus of the organization (Heinzelman & LaPointe, 2007).

• **Intervene early.** According to McCook (2006), research indicates that three years of ineffective teaching basically dooms a child’s opportunity to benefit from educational programming. RTI promotes the prescriptive instruction necessary to address student learning difficulties. Wait to fail does not work. Highly effective diagnosis and interventions are critical to build a solid foundation for learning. Early intervention is supported by the use of some universal screening mechanism, administered at predetermined intervals, to identify students at risk and in need of intervention.

• **Use a multitier model of service delivery.** Once students are identified through universal screening as being at-risk, instruction is differentiated through a tiered approach to service delivery. Instructional intensity and duration of intervention increases as students move up the tiers in direct proportion to their individual needs (NASDE, 2005). In this Tiered approach, ideally 80% of students are profiting from benchmark instruction
in the core program. In order to reach benchmark or grade level, another 15-20% of students may need additional targeted instruction to supplement their core program. Finally, another 1-5% of students may need intensive instruction and intervention for extended periods in order to perform at grade level (Heinzelman & LaPointe, 2007).

- **Use research-based, scientifically validated instruction and interventions to the extent available.** Use of high yield strategies for increasing student achievement is mandated by NCLB and IDEA legislation. High yield strategies that are implemented with fidelity will ensure that students have access to high-quality learning opportunities.

- **Monitor student progress to inform instruction.** Movement within and between the tiers in an RTI model is based on data obtained through progress monitoring. Curriculum-based measurements and frequent, systematic attention to student work allow educators to see incremental changes in student performance and inform the successfulness of the intervention (Howell, Patton, & Deiotte, 2008).

- **Use data to make decisions.** All decisions in an RTI model are based on data. The cyclical problem solving process begins by asking, “What is the discrepancy between what is expected and what is occurring?” The cause of the problem is hypothesized using all available data, a plan is developed, implemented, data is collected, and then the plan is evaluated by looking at the results. Data in an RTI model must be “easily accessible, understandable, relevant, current, and accurate” (Howell, Patton, & Deiotte, 2008).

- **Use assessment for three different purposes.** Screening assessments allow educators to determine if students are making expected progress. Diagnostic assessment allow us to find out what students can and cannot do and helps us to design effective interventions that match student need. Progress monitoring assessments allow us to determine if the
intervention we are providing is having the expected impact on student learning
(Heinzelman & LaPointe, 2007).

**Definition of Terms:**

**Core instruction.** English, reading, language arts, mathematics, science, foreign
languages, civics and government, social studies, economics, arts, history, geography, and
kindergarten through Grade 6 (K-6) (NCLB, 2001).

**Curriculum based measurement.** Formative assessments that directly measure student
performance within the existing curriculum (Howell, Patton, & Deiotte, 2008).

**District RTI leadership team.** A team that provides leadership in the design,
development, implementation, and evaluation of an RTI system. This team should include an
administrator, district leaders of curriculum and instruction, data coach or assessment
coordinator, teacher representatives, educational support staff, and parents (Howell, Patton, &
Deiotte, 2008).

**Effective instructional model.** A model of instruction that ensures high expectations for
all students and uses a variety of research based linguistic and nonlinguistic strategies to increase
student engagement and achievement and based on data driven decision making (Marzano, 2003)

**Improved student achievement.** The increased ability of students to demonstrate the
skills required to master grade-level expectations by attending class, completing grade level
assignments accurately, taking and passing tests, and staying on task in the classroom (Howell,
Patton, & Deiotte, 2008).

**Multi-tier model of service delivery.** A service delivery system that incorporates
increasing intensities of instruction that are provided to students in direct proportion to their
individual needs (NASDE, 2005).
**Progress monitoring.** Use of frequent assessment that is sensitive to small change in student performance to determine the effectiveness of instruction in order to maximize the impact of instruction/intervention (Heinzelman & LaPointe, 2007).

**Problem solving approach.** A method of planning for interventions that uses root cause analysis to develop a plan to address the learning needs of individual students (Howell, Patton, & Deiotte, 2008).

**Problem solving team (PST).** A team that uses data to discern current issues that exacerbate failure, discover the root cause or primary problem(s), and create a continuous improvement process to close the gap between a child’s performance and grade level, national norm, or expected achievement (Howell, Patton, & Deiotte, 2008).

**Response to intervention.** A data based, decision making framework for promoting access to high-quality core instruction and providing increasingly intensive interventions in a timely manner for students who struggle with core instruction (NASDE, 2005; Johnson, Mellard, Fuchs, & McKnight, 2006; Heinzelman & LaPointe, 2007).

**Scientific research based intervention.** Interventions that have been tested through rigorous, systematic, and objective procedures to obtain reliable and valid measures of the efficacy of the approach to increase student achievement (IDEA 2004).

**Standard treatment protocol approach.** A method of planning for intervention that utilizes system specific SRB intervention protocols or programs that have a high probability of producing change for most at-risk students. These protocols have defined conditions for frequency, duration, personnel, and materials used (Heinzelman & LaPointe, 2007).

**Universal screening.** A reliable, valid, individual, or group assessment characterized by brief, low cost, repeatable, and easy to administer “probes” that are aligned to curriculum,
measure critical academic benchmarks/behavioral skills, and are sensitive to incremental student growth toward benchmarks (Heinzelman & LaPointe, 2007)
Chapter II: Review of Literature

Effective Elementary RTI Implementation

In order to determine the necessary components of a secondary level RTI model, it will be necessary to first identify what components have proven essential in RTI implementation in elementary schools. A qualitative descriptive case study was conducted by White, Polly, and Audette (2012) to identify critical features of an elementary school’s implementation of an RTI model and the contextual influences related to those events, according to the perspectives of the participants. The fifteen participants in this study, employed at a relatively new elementary school in North Carolina which had been selected as the district’s RTI pilot school, were selected based on building leadership role, knowledge of the pilot implementation, or membership on the school’s RTI leadership team. Seven of the team members had previously participated in extensive RTI professional development in a train-the-trainers model. All participants were interviewed once in an unstructured interview that focused on a few primary questions, followed by probes that were influenced by participant responses. Interviews ranged from 40 to 60 minutes in length, and participants were encouraged to share successes and challenges they had experiences during their personal involvement in RTI implementation. Data analysis involved an interpretive approach where transcripts were coded using an open-coding system. Codes were shared to determine inter-rater reliability, and each code was analyzed collectively to determine that the code accurately portrayed the themes of participant testimony. A time-ordered matrix was developed to illustrate the relationship between themes identified by researchers and implementation of the RTI model. Overall, seven themes were identified and described.

(1) Frustration with old models and systems: White, Polly, and Audette found that participants were frustrated with the traditional method of referral for special education services.
The use of RTI allowed for extensive data collection to determine the problem, select appropriate interventions, and progress monitor for improvement.

(2) Implementation process and procedures: Teachers felt more supported when there was collaboration with special education to meet student needs. Participants also reported that implementation of RTI required the initiative of key building staff. They indicated that the existence of a RTI Leadership Team, made up of committed staff members increased whole staff commitment and buy-in.

(3) Classroom implementation: Initial classroom implementation caused a major change in teacher roles. Staff members were expected to quickly learn and implement multiple components of RTI simultaneously.

(4) Principal leadership: Commitment of the principal was evidenced by his constant presence and positive force behind implementation. Administration was perceived to set the tone for RTI implementation and make it a part of the building culture.

(5) Professional development: Professional development was identified as a critical component. The major benefit was the opportunity for team collaboration and development of a collective understanding of RTI as a process and the use of data to drive decision making.

(6) Improved outcomes: Improved outcomes were another area that participants identified. Better data collection led to better problem identification and an increased understanding of the need to implement interventions with fidelity. Initial student success fostered increased buy-in, which led to improved implementation and continued student success.

(7) Implementation Obstacles: Obstacles to implementation were also perceived. Fatigue and a sense of being overwhelmed were most often reported. Participants felt the initial
learning curve was very steep, yet also reported that they wished they had possessed a higher level of knowledge from the outset.

White, Polly, and Audette concluded that obtaining teacher buy-in and providing adequate support increased the likelihood that RTI would be successfully implemented. Caution should be exercised regarding the ability to generalize results from this study due to the unique characteristics of the school and staff participating. Nevertheless, it does provide a comparative basis for other schools looking to begin an RTI initiative.

A qualitative case study by Lau and his team (Lau, Seiler, Muyskens, Canter, Vankeuren, & Marston, 2006) identified the essential implementation components of an RTI Problem Solving Model (PSM) for identification of students with specific learning disabilities. The goal of a problem solving model is to provide resources and support to at-risk students so that they can be served within general education, by general education staff if possible. The participant in this illustrative case study was a second grade student enrolled in the Minneapolis Public School System (MPSS). MPSS, a racially, ethnically, socioeconomically, and linguistically diverse district had 10 years of experience implementing a PSM for Specific Learning Disability identification using a team approach. Simon, the subject of this case study, was initially identified as being at-risk due to scoring below the 25th percentile and the building-wide Curriculum-Based Measurement (CBM) reading-fluency screening. After baseline data was collected by the general education staff, an evidence-based intervention plan to address Simon’s reading deficiency was designed, and implementation was planned for a 4 to 6 week period. At the end of the intervention period, Simon did not demonstrate significant response to intervention and was referred on to the second stage. The second stage of the PSM process involved a multidisciplinary team approach where concerns were refined and more intensive and frequent
levels of support were planned. At the end of the 6 to 8 week intervention period, Simon was still not close to meeting the aim line for performance. Based on the results of the data collected, the team decided that Simon’s failure to meet goals set by the PSM team and lack of progress despite extensive interventions necessitated a referral for special education evaluation. Stage 3 in the PSM paralleled the traditional special education evaluation. All relevant data from previous intervention attempts were reviewed and incorporated into the final array of assessment data. Multiple methods of data collection such as records review, observation, interview, work samples, and direct student interaction were conducted to complete the evaluation. This evaluation resulted in special education eligibility for Simon.

Based upon data that shows MPSS special education referrals remained constant (7%) for the past 10 years despite an increase in the population of at-risk students, Lau and his team concluded that the benefits of a PSM for students and the implications of a PSM were for personnel were significant. Among the benefits mentioned by staff were collaboration and coaching opportunities, which built capacity for implementation. Additionally, strong administrative support made staff accountable for following the model and made it a part of the school culture. PSM team membership also allowed staff members from various disciplines and specialties to exchange best practices and design high quality interventions to meet student needs. Based on their experience, Lau and his team recommended the formation of a multi-disciplinary PSM team; ongoing support, training and professional development; streamlining of the team process to include the use of technology and consideration of systems level interventions; and the development of an evaluation plan that includes gathering student achievement data as well as evaluation of the overall system-wide model and implementation.
A qualitative grounded theory design study by Rinaldi and Stuart (2009) identified the factors that staff members felt were essential to successful RTI implementation in an urban elementary pilot school that practices the principles of Whole Schooling, a philosophical approach to schooling in which all children succeed in engaging, inclusive classrooms where research-based practices support the development of the whole child. The student population of this school was a majority of Hispanic students (59%) with African American (16%), Asian (13%) and White (11%) students comprising the remainder of the population. Sixteen percent of students received special education services and 39% were identified as having Limited English Proficiency skills.

Over a 12-month period, data was collected from all 25 building professionals using a grounded theory framework. This allowed for the creation of the theory to evolve during the research. Participants included general and special education teachers, speech and language therapists, and school psychologists. Surveys, focus groups, and in-depth interviews with all professionals centered on questions about the pre-referral and special education processes in the school. The focus group and interview data were analyzed using the constant comparative method. According to Rinaldi and Stuart, this method consists of four overlapping stages. First data is collected and coded into as many analysis categories as possible. After the focus groups were conducted, emergent themes were used to formulate questions for individual interviews. After collecting all the data, all notes, transcripts, and questionnaires were re-read to generate and code themes. Data was sorted into similar categories, and then similar themes were combined.

Finally, three overarching themes were identified. According to survey results, approximately half of the staff reported that they were dissatisfied with the support for general
education teachers that the pre-referral and special education process provided (55% and 52%). Focus groups and individual interviews showed that participants were supportive about developing a RTI model that would meet student needs, but cautioned against developing a “one size fits all” plan. Elements considered essential were provision of scientific, research-based interventions, monitoring and measuring of student progress, and use of assessment information to inform instruction.

After the 10 month data collection period, the RTI model was put into place. Components of the model included universal screening, scientifically, research-based instruction/intervention, tiered instruction, progress monitoring, and a collaborative planning model. Collaborative planning teams met after school for 10 week sessions to link the process of using assessment results to develop student goals. The teams were facilitated by the researchers and teachers were compensated for their time. Team members developed an informal curriculum-based assessment tool and focused on collaborative evaluation of instructional strategies. Data analysis to evaluate student progress became the focus near the end of the session sequence.

Overall, teams reported that they felt the collaborative planning model was helpful. Staff felt engaged and supported and saw success for their target student over time. The results of this study indicate that increased collaboration, problem solving, and progress monitoring lead to satisfaction with RTI implementation. Time and support for collaborative problem solving as a method of monitoring student achievement, as well as guidance and coaching appear to be necessary in order to address the needs of staff working to increase the achievement of all students.
While most studies sought to identify the components of successful RTI models, one study looked at an unsuccessful model and identified challenges that precluded satisfactory implementation. Orosco and Klingner (2010) conducted a qualitative case study to determine how one urban school with a high percentage of English language learners implemented RTI at the primary level (K-2) during the 2nd year of a 3 year implementation period. Orosco and Klingner sought to describe school personnel’s perceptions of RTI, what the model looked like, and what challenges they faced. The school that was the subject of this study was selected as an RTI implementation site by the district because it had strong administration, school personnel were willing to implement RTI, and the school had been identified as being in declining status. An overwhelming majority of the school’s population (98.9%) qualified for free and reduced-price lunch. The school population consisted of 290 students, of which 85% were Latino. Eighty percent of these students were considered English language learners, and 39% of the ELL population was in special education. Only 11% of ELL students were reading at a proficient level despite the school functioning as an ESL immersion program. The district adopted a three tier problem-solving model of RTI. The school also established a multidisciplinary RTI team to guide implementation. Eight school professionals were identified as participants in this study. Participants were all equivalent in experience and educational experience and represented either special or general education backgrounds. Orosco and Klingner collected multiple sources of data, including observations, interviews, and artifacts over a 5 month period. Data analysis used chunking and open coding. Codes were continuously refined and modified as necessary. Discrete codes were grouped into conceptual categories using axial coding methods. Selective coding then allowed researchers to build themes by deciding the codes relation to each other and what story they told. Triangulation of data sources was constantly compared and cross checked.
with information derived at different times and by different means. Four themes were identified by Orosco and Klingner: Misalignment in Instruction and Assessment, Negative Schooling Culture, Inadequate Teacher Preparation, and Limited Resources. They concluded that the RTI model created in this school was built on a deficit-based approach and appeared fragmented due to the application of generic assessment and instructional principles that were not appropriate for meeting the needs of the ELL population. The RTI team focused on the use of an IQ-achievement discrepancy formula rather than the progress monitoring data that was supposed to be used to develop an intervention plan. Negative schooling culture persisted as teachers viewed student culture, home life, and parental involvement through the lens of their Anglo middle-class experiences. This culture was at odds with the reported guiding principles of RTI which stated that all children could learn and that teachers could effectively teach all children. Teachers were inadequately prepared to provide instruction to the ESL population and had limited resources to use in instruction. Orosco and Klingner concluded that their findings contributed to the development of an RTI model that was not meeting student needs. As noted by previous studies in this analysis, successful RTI models are dependent on factors such as teacher attitudes and beliefs, assessment and instructional practices which meet student needs, and appropriate professional development opportunities to increase teacher competency.

While not formally an RTI model, the Academic and Behavior Competencies (ABC) program addressed school-wide behavior and academic performance in an elementary school with a high at-risk population (Pelham, Massetti, Wilson, Kipp, Myers, Standley, Billheimer, & Waschbusch, 2005). This descriptive qualitative report described the ABC program and presented preliminary information on the perceived effectiveness and satisfaction with the initial implementation of the program, as well as its replication in other districts. Initial implementation
took place with 371 students in grades K through 5. Participants were from similar racial and socioeconomic backgrounds. Two thirds of participants scored in the bottom third on standardized achievement tests using national norms. All school staff participated in the school-wide implementation of the ABC program as well. Staff received initial training that included role-playing and feedback. Ongoing support and coaching was provided during the school year, with independent checks for fidelity. Tapering of teacher contact was done systematically as teachers were deemed by behavioral consultants to have reached stable levels of implementation.

The ABC program followed a standard protocol for implementation. Staff members were taught to establish school-wide expectations for behavior, use reinforcement for appropriate behaviors, and enforce consequences for inappropriate behavior. Weekly assignment sheets were implemented to increase student completion of academic tasks. A system of student recognition was established and social skills were discussed and role-played with students. Data was collected on student behavior and used to make decisions about the need for targeted interventions with students who did not respond positively to the school-wide intervention.

Surveys were completed at the end of the initial implementation year to evaluate perceived stakeholder satisfaction with the program. A 7 point Likert scale, with 1 indicating strongly disagree and 7 indicating strongly agree was used to determine effectiveness. Office records of discipline referrals, suspensions, and homework completion were also evaluated. Survey results indicated that teachers and parents overwhelmingly rated the ABC program as effective at the end of year one (Range 87 to 100 percent). At the end of the second year, percentages dropped for both teacher and parent effectiveness ratings (Range 63 to 100 percent). Specifically, respondents endorsed statements having to do with perceived student satisfaction with the program and perceived improvement in student attitudes toward school. Results of the student
survey showed that students endorsed all of the program components at high levels (Range 82 to 92 percent) at the end of year one, a lower percentage (70) endorsed the use of the daily behavior report card at the end of year two. Students endorsed that they liked incentive components of the program at levels equal to or exceeding their endorsement that the components were helpful. Students endorsed that they liked components such as rules and point systems and the weekly assignment sheet at a lower level, even though they reported that they found them helpful. Unobtrusive measures indicated that visits to the principal’s office declined from 1,200 in the year prior to implementation to 178, 373, 525, and 290 in the first 4 years after implementation. Suspensions decreased from 75 to 11 at the end of the first year. Homework completion rates increased from 25% to 85%, 92%, 95%, and 95% for the subsequent 4 years following implementation. The team concluded that, although this was not a controlled evaluation, the relevant stakeholders in the school communities that implemented the ABC program were highly satisfied with the program. They noted that advantages of the program are its basis in evidence based practices, the ongoing consultation, the use of data to guide program implementation and identify students in need of additional services, and the adaptability of interventions to the classroom environment. Intensive initial training, ongoing follow-up and support, and the capacity building nature of the intervention were considered to contribute to teacher satisfaction with ABC program implementation. The team further noted that the replication of the ABC program and its sustainability in other districts supports its viability. A limitation of this report is the fact that it did not include a discussion of academic achievement as a result of implementation.

While most studies addressed RTI for academics, one focused specifically on RTI for behavior at the elementary level. A mixed method descriptive study by Pearce (2009) evaluated
the implementation of an RTI model in the treatment and identification of students in
kindergarten through fifth grade who experienced significant emotional and behavioral problems
within a rural school setting. Participants came from a rural school district in the northern
Midwest. The nine teacher participants were similar in the areas of teaching experience and
certification and were identified for inclusion based on having children of concern placed within
their classrooms. Nine students also were identified for participation based on needing support
due to significant emotional and behavioral problems manifested within the school setting. The
RTI model implemented in this study had three tiers of intervention. Tier 1 involved school-
wide approaches that included expectations for behavior, a hierarchy of negative consequences, a
system of rewards, and a character education instructional program. Tier 2 consisted of the
application of evidence based interventions. Student behavior was monitored during this tier and
interventions were either continued or faded depending on response. Tier 3 interventions
included special education and outside agency supports. All students received Tier 1
interventions which were assessed for fidelity by the principal and teachers. A problem solving
approach using the results of functional behavioral analysis was used to determine appropriate
interventions for students referred to Tier 2 based on office referrals. Referral to Tier 2 occurred
when students displayed behaviors that were dangerous or excessively disruptive. Progress
graphs measured quantitative outcomes of this process over a two year timeframe. The number
of maladaptive episodes decreased overall for seven of the nine students referred for Tier 2 as a
result of Tier 1 intervention. Interventions were able to be faded for two of the seven students at
Tier 2. The remaining five students needed continued intervention at Tier 2 to maintain
progress. In addition to the quantitative data, qualitative data collected from teachers, principals,
students, and parents indicated positive outcomes associated with intervention. Specifically,
stakeholders identified support and collaboration as two essential features that led to increased capacity to implement interventions to address student behavior. Pearce concluded that the use of data to drive decision making, a system of tiered interventions, and the proactive nature of the RTI model led to positive effects. Additionally, weekly opportunities for staff collaboration and ongoing training and professional development were essential to cultivating feelings of teacher success.

**Modifications of RTI Core Principles and Features**

*Assessment considerations for adolescents.* One of the core principles of a RTI model is an emphasis on assessment and intervention. At the elementary level, words correct per minute (WCPM) is a commonly used universal screening tool. While predictive of reading comprehension levels, WCPM is not a direct measure of reading comprehension, which may be more important at the older grades where there is a transition of focus from fluency to text comprehension. A quasi-experimental design study conducted by Hale, Henning, Hawkins, Sheeley, Shoemaker, Reynolds, & Moch (2011) examined the validity of reading comprehension assessment measures for middle school students by examining correlations between student performance on various curriculum-based measures and Cluster Scores obtained on standardized achievement test measures. Seventy-seven students, recruited from 6th, 7th, and 8th grades general education classrooms at a K-12 private school in the Southeastern United States participated in this study. Students were recruited by obtaining parental consent and student assent for participation in the study. Graduate students from a school psychology program, who had all participated in training procedures for assessment administration and scoring, administered the assessments. Over a five school day window, students were exposed to three assessment sessions, which consisted of modified AimsWeb Maze-CBM passages, Timed
Reading Series passages (Spargo, 1989), and three subtests from the Woodcock-Johnson III Test of Achievement (WJ-III ACH; McGrew & Woodcock, 2001). The scores from the three subtests, Letter-Word Identification, Reading Fluency, and Passage Comprehension, provided the Broad Reading Cluster Score used in the data analysis. Data was collected on the number of words correct per minute (WCPM), and reading comprehension rate (RCR) from the Timed Reading Series passage assessment. A Maze accurate response rate (MARR) score was calculated from the AimsWeb Maze-CBM assessment. A linear regression was conducted which indicated that both MARR (β = .26, p < .05) and RCR (β = .52, p < .01) are significantly predictive of WJ-III Broad reading Cluster Scores. WCPM was not found to be a significant predictor (β = .15, p > .05). Results obtained in this study support the idea that RCR and MARR may provide a more sensitive measure of reading skills for middle school and high school aged students than WCPM does.

**Intervention considerations for secondary school learners.** The use of high yield intervention strategies, matched to student needs, is also an essential component of a Response to Intervention model. Quality reading instruction focuses on phonemic awareness, phonics, vocabulary, fluency, and comprehension. Students with low reading abilities must be provided with meaningful instruction that meets their particular area of deficiency in reading. A qualitative case study conducted by Dennis (2009) addressed the need to identify particular strengths in adolescent striving readers and use appropriate instructional strategies. The participants in this case study were middle school adolescent readers assigned to Dennis’s remedial reading class based on below proficient scores on the Tennessee Comprehensive Assessment Program (TCAP). Students in this class were expected to complete the district mandated reading intervention program which consisted of a one size fits all model that
emphasized phonemic awareness, phonics and decoding skills. Feeling that this prescribed program would not meet student needs based on assessment information collected from state assessment and informal reading inventories, Dennis focused on what students already knew to develop a plan for literacy instruction. Students were individually administered five diagnostic/inventory assessments that measured phonemic awareness, phonics, fluency, vocabulary, and comprehension skills. Cluster analysis was used to link students with similar abilities and needs. Based on the analysis, four distinct groups of striving readers were identified, each with different instructional needs. Dennis concluded that the danger of implementing a remedial reading class or intervention program based on the premise that all striving readers have identical needs is that no students will be provided with appropriate opportunities to increase their literacy capabilities. It is important to utilize diagnostic data to identify specific needs and provide ongoing assessment to inform instruction.

In a RTI framework, interventions are provided in increasing intensity to remediate and help close the gap between students performing at benchmark and those who are in need of intervention. Using a quantitative experimental design, Vaughn and her team of researchers implemented and evaluated the outcomes of a comprehensive researcher-provided Tier 2 intervention with middle-grade students with reading difficulties (Vaughn, Cirino, Wanzek, Wexler, Fletcher, Denton, Barth, Romain & Francis, 2010). The participants in this study were struggling sixth grade readers (n=356) and a random sample of typical readers (n=468) from two large urban school districts in the southwestern United States. The 356 struggling readers were randomly assigned in a 2:1 ratio to either researcher-provided Tier 2 intervention or a comparison condition. The students identified for the Tier 2 intervention condition either obtained a score on the Texas Assessment of Knowledge and Skills (TAKS) that was below the
cutoff of 2,100 or had an obtained TAKS scaled score whose lower bound 95% confidence interval included a failing score. The Tier 2 group contained students with “bubble scores” as well as those with very low reading achievement. Typical readers scored at least one standard error of measurement above the passing score (higher than 2150). Fifty-two percent of the final struggling reader sample was female and 79% of the sample qualified for free and reduced lunch. One-hundred fifty-two students (46%) were African-American, 132 (40%) were Hispanic, 40 (12%) were Caucasian, and 3 (1%) were Asian.

The researchers first assessed decoding and spelling, fluency, and comprehension of both groups using standardized measures. The research team then provided professional development and on-going coaching on evidence-based practices for teaching vocabulary and comprehension to content-area teachers of all 6th grade students. Following the professional development, struggling readers were placed in homogeneous intervention groups and received a year-long Tier 2 intervention. The researcher-provided intervention consisted of three phases of intervention that varied in emphasis on fluency, word study, or comprehension. Students in Tier 2 received intervention in groups of 10-15 for approximately 50 minutes per school day from September through May. The interventionists had certification in reading or language arts related area and had undergone approximately 60 hours of professional development prior to teaching. On-going staff development and coaching was provided to the interventionists. Fidelity checks showed that interventions were appropriately implemented by all interventionists. An analysis of covariance for mean score was conducted for measures with only two time points, with post-test scoring being the dependent variable and the pretest score the covariate. Measures with several time points were analyzed with growth models that were fit to evaluate performance trajectory. Most analyses compared the mean of Tier 2 and comparison
groups, because of the randomized assignment. Performance of typical readers at pretest and posttest was also considered in data analysis to provide context and to measure the extent to which the gap between struggling and typical readers was closed. Fidelity, intervention time, and group size were also within the context of Tier 2 treatment. Results indicate that for Tier 2 subjects there were significant main effects at pretest for decoding and spelling, comprehension, and fluency, but not for treatment. Overall, students who received Tier 2 intervention outperformed those in the comparison condition on word attack, spelling, comprehension, and phonemic decoding efficiency; however, noted gains were small. Group size, time in treatment, and additional instruction did not substantially relate to treatment outcome. Typical students’ standard scores showed little change from pretest to post-test. Gains within the group of typical students were reported as comparable to those evidenced in the comparison group. Typical students outperformed students in the Tier 2 intervention on all measures at pretest (median $d = -0.95$) and posttest (median $d = -0.94$).

The results of this study suggest that the goal of closing the gap between struggling readers and typically performing readers at the 6th grade level over the course of a single school year using Tier 2 intervention may be overly ambitious. It is suggested that significant effects of Tier 2 interventions may not have been noted due to the positive impact of Tier 1 professional development and coaching on the performance of all students. Additionally, the standardized intervention package used for Tier 2 intervention, while aimed at meeting the needs of the group, gave less focus to individualization or responsiveness to student needs. Perhaps a problem solving model, versus the standard treatment protocol, would have increased the impact of the Tier 2 intervention. Students with low performance after many previous years of instruction may
be less amenable to change. Smaller group sizes and higher intensity and frequency intervention may have led to a higher rate of acceleration of performance.

To further investigate the impact of tiered intervention on student performance, Vaughn and Pyle (2012) studied a multiyear implementation of an RTI model with struggling middle school students performing well below grade level. In this experimental design, the researchers followed struggling readers in grades 6 to 8 from seven urban, rural, and suburban middle schools in two large cities in the Southwest for a three year period. Participants (n=1,083) were identified as struggling readers if they did not pass, or scored within 1 standard error on the Texas state accountability reading measure (TAKS). A random selection of typical readers (n=784) was also identified. Participants came from similar socioeconomic backgrounds and gender was evenly distributed in the initial Tier 2 phase of the study. Baseline performance for regular progress monitoring purposes was established through the use of AimsWeb Reading Maze and Passage Fluency. Professional development on vocabulary and comprehension strategies was provided to all teachers to ensure research based Tier 1 instruction. Tier 2 students were then assigned to either a treatment condition or comparison condition for a full year intervention. At the end of year 1, minimal responders to Tier 2 were randomly assigned to either an individualized instructional approach or a standard protocol approach at Tier 3 for an additional full year of intervention. At the end of year 2, minimal responders were identified for inclusion in a Tier 4 intervention. Use of smaller group size and individualized remediation approaches were implemented to provide remediation. Vaughn and Pyle found that students who received the Tier 2 treatment (n=327) outperformed students in the comparison condition on measures of word attack, spelling, passage comprehension, and phonemic decoding efficiency (median $d = +.16$). Continued intervention at the Tier 3 level (n=182) also resulted in higher
scores for treatment versus comparison students (median $d = 0.23$). There was no discernible
difference between individualized or standard protocol intervention conditions at Tier 3. For
those minimal responders who continued into Tier 4 treatment ($n=28$), improvement was noted
on word identification (ES = 0.49) and reading comprehension (ES 1.20), although overall
reading scores remained well below grade level. Students in the comparison group declined on
nearly all reading measures. Vaughn and Pyle concluded that struggling readers who received
intervention maintained reading achievement and did not experience the decline associated with
those students who were not provided intervention. It was also evident that struggling readers
needed different levels of intensity of instruction across all reading components. As they noted,
it may be necessary to provide secondary level struggling readers with interventions throughout
their schooling and invest in a whole-school model to increase evidence based instructional
practices for quality reading instruction. The practice of placing severely discrepant secondary
students immediately into the most intensive level of the RTI framework rather than waiting for
them to demonstrate responsiveness at lower tiers was also supported by the evidence from this
study.

Although most research studies addressed tiered intervention as treatment conditions to
be implemented by researchers or “experts,” one focused on understanding how RTI is
implemented by school-based practitioners. A quasi-experimental design by Ardoin, Witt,
Connell, and Koenig (2005) provided a demonstration of an RTI model for identifying students
potentially in need of special education and monitored the mathematics achievement of 14
fourth-grade students. The students came from similar economic backgrounds and were all
grouped in the lowest of three math sections in their team taught classroom. All students were
screened using three single skill M-CBM probes in counterbalanced order. Performance was
measured by determining the number of digits correct obtained in 2 minutes. Results (M = 3.9; range 0 to 11) showed a class-wide skill deficit and a class-wide intervention was implemented on problems requiring 2 digit by 2 digit subtraction with regrouping. The intervention components included modeling, practice, and reinforcement. Students who participated only in the class-wide (Phase II) intervention showed improved performance (M = 17.1; range 13 to 22). Four students were identified for further intervention (Phase III) due to having either 0 or 1 digit correct on the baseline assessment or whose performance following Phase II remained below the Phase I class-wide mean. Intervention in the Phase III condition consisted of peer tutoring with flash cards and Cover, Copy, Compare + Instruction (CCC + Instruction). Students in this condition improved their performance (M = 13.4) compared with their performance at the end of the class-wide intervention (M = 8.8; range 8 to 12). While the researchers note that the lack of a control group and the inclusion of only one baseline data point prohibited the conclusion that improvement was a function of Phase II intervention, lack of instruction on 2 digit subtraction with regrouping through any other means suggests that improved performance was due at least in part to the intervention. Ardoin and the rest of the team concluded that adapting evidenced-based interventions that have become a part of everyday school practices can allow practitioners to take advantage of decision making tools in an RTI model with the goal of more accurate decision making regarding student needs. They believe that the possibilities for routine use of RTI in the “real world” are promising.

The use of evidence based interventions is essential in an RTI framework. A quantitative research study by Fagella-Luby and Wardwell (2011) examined three Tier 2 reading comprehension interventions for at-risk middle school students. The effects of three standard treatment conditions of instruction, Story Structure (SS), Typical Practice (TP), and Sustained
Silent Reading (SSR) were investigated by randomly assigning at-risk 5th and 6th graders (n=86) from a public urban middle school in a northeastern state. Additional participants included five female middle school teachers, two of which provided the typical practice, and the other three leading the SSR groups. The two SS group teachers were fifth-year student interns working on a master’s in education. Students were selected for inclusion in the study if their scores fell below the criterion of 48 for fifth graders and 52 for sixth graders on the Degrees of Reading Progress (DRP) screening test. Selected 5th graders fell in the score range of 32 to 44 while the 6th grade score range was 36 to 52. Once participants were selected, they were randomly assigned to the experimental story structure condition, the typical practice condition, or the SSR group.

Due to time constraints, no pretest was completed. The independent variable was the treatment condition to which students were assigned. The SS condition was provided in 30 minute sessions 2-3 days per week over 18 weeks. Components described and modeled by the teacher included self-questioning, story structure analysis, and summarizing. A written protocol was followed to teach the intervention, and review and corrective feedback were provided to students. Meanwhile, the typical practice group instruction mirrored the beliefs and philosophies of the reading specialists who delivered the instruction. Comprehension instruction in this condition used methods that generally fell within the recommendations of the National reading Panel. Four regular activities were instruction in active reading strategies, vocabulary instruction which corresponded to the story, guided reading groups, and journal writing. There was a focus on describing and discussing, but not on teacher modeling of strategy use. In the SSR condition, students were engaged in SSR for 30 minutes each day. In total, SS received 35 days of instruction, while TP and SSR students received 48 days.
Dependent measures included performance on the AimsWeb Maze, the strategy use test, and the Gates-MacGinitie Reading Comprehension assessment. Post testing for the SS and TP groups occurred after 18 weeks of instruction. Means and standard deviations were computed for the three posttest measures by grade and condition. An alpha level of .05 was used to determine significance of main effect and interactions. According to the researchers, cloze results determined no main effect for grade, $F(1,74) = 3.529, p = .064$, or condition, $F(2,74) = 2.174, p = .121$. There was a significant grade-by-condition interaction, $F(92,74) = 3.434, p = .037$. A two-tailed Bonferroni correction determined that there was no significance between conditions at the 5th grade level, but results were statistically significant at the 6th grade level between the SS and SSR mean scores ($0.536 < x < 12.23$) and the TP and SSR mean scores ($1.55 < x < 12.59$). Strategy use mean scores were equivalent regardless of grade level or condition. GMRT-4 Comprehension results were significantly higher for sixth graders ($M = 24.19, SD = 6.231$), but not for intervention condition. A descriptive analysis was conducted to examine individual student response to instruction within conditions for 5th graders. This showed less than the 74% expected response to Tier 2 instruction across all conditions.

Conclusions drawn from this study include the importance of both specific targeted instruction as well as ongoing practice which was provided by the SSR. Tier 2 interventions may also require a higher level of direct and intense instruction, including think-alouds and modeling. Increased time in intervention may be necessary to achieve adequate response. While the struggling readers in this study made gains, they were not significant. This supports the use of RTI as a framework for delivering increasingly intense interventions to improve student performance. Intervention provider experience and expertise may also affect results. This supports the idea that the most skilled and experienced teachers should provide instruction for
the most at-risk students. Administrator support and coordination is also necessary to assure high levels of fidelity in whichever intervention is being delivered. Professional development and ongoing coaching support for novice teachers would help increase fidelity of implementation.

While many studies looked at the external implementation variables associated with an RTI framework, a quasi-experimental design study by Nunn and Jantz (2009) examined the impact of RTI involvement and implementation experience on teacher’s perceptions of effectiveness in controlling positive outcomes in student learning and behavior. Believing that effective processes and methodologies to support interventions have the potential to develop higher levels of perceived teacher efficacy, Nunn and Jantz gathered data from 429 K-12 teachers, administrators, and support professionals trained in a year-long RTI implementation initiative. Participants represented small to large school districts which had been selected to become RTI implementation pilot sites. Teams received 5 days of training, over an academic year, in RTI best practices along with school-based collaborative team assignments and follow-up coaching on-site to aide in implementation. The Teacher Efficacy Beliefs and Behaviors Scale (TEBBS) was administered to all participants, resulting in an 88% completion rate. Based on previous administration and the application of principle component analysis, the TEBBS components of interest that accounted for the greatest amount of variance were Intervention Skills Efficacy (ISE), Motivational Skills Efficacy (MSE), and External Control Efficacy (ESE). A two-way analysis of variance compared these components to the independent variables of RTI-Involvement (RTI-INV) – High, Moderate, or Low, and RTI-Implementation (RTI-IMP) – Preparation, Mechanical, Routine, or Refined, that were based upon participant self-evaluation derived from descriptive scenarios provided. Results indicated that RTI-IMP was
significantly associated with Intervention Skills Efficacy, $F[4,429] = 4.37$, $p<.005$, among educators engaged in Refinement (Mean = 1.58) and Routine (Mean = 1.72) levels of implementation versus those functioning at the Preparation (Mean = 2.37) and Mechanical (Mean = 2.04) levels. Regarding RTI-INV, significant main effects $F[2, 429] = 3.55$, $p<.03$ were also found for participants with High (Mean = 1.74) and Moderate (Mean = 1.71) involvement in their collaborative teams. Similar findings were noted for Motivational Skills Efficacy related to RTI-INV, $F[2, 428] = 3.90$, $p<.02$ with High (Mean = 2.09) and Moderate (Mean = 1.98) involvement more likely to evaluate their efficacy in using motivational skills than those at a Low (Mean = 2.70) level. The main effect for RTI-IMP was also significant, $F[3, 428] = 2.87$, $p<.04$, with Preparation (Mean = 2.64) and Mechanical (Mean = 2.34) being rated as less efficacious than Routine (Mean = 2.02) or Refinement (Mean = 1.99). Analysis of External Control Efficacy did not demonstrate significant main or two way interaction effects for either the RTI-INV or RTI-IMP variables. Nunn and Jantz concluded that successful participant involvement with, and implementation of, RTI knowledge, skills, and strategies learned in the training sequence and applied in collaborative settings positively impacted participants’ perception of their ability to influence student achievement.

**RTI in Secondary School Settings**

**Secondary school student and staff perceptions.** When considering how RTI may be modified to meet the needs of secondary school students, it may first be necessary to consider the perception of adolescents regarding teacher actions that contribute to their success. Improved social emotional functioning of adolescents is thought to influence positive outcomes related to academic success, social competence, and effective problem solving and coping capabilities (Malecki & Demaray, 2003). A mixed methods investigation sought to identify which types of
teacher support were most strongly associated with adolescents’ Subjective Well Being (SWB) and uncover students’ perceptions of specific teacher behaviors that communicate social support (Suldo, Friedrich, White, Farmer, Minch, & Michalowski, 2009). Data was collected from 401 middle school students attending school in a diverse urban district. A majority of participants were female (60%) and identified themselves as Caucasian (54%). About 25% of participants were of low socioeconomic status. The mean age of participants was 12.92 years. For the quantitative portion of the study, participants completed self-report measures of SWB and social support. For the qualitative portion, data was collected from participation in focus groups to uncover students’ perception of teacher behaviors that communicate support. Relations between types of teacher support and SWB were examined via correlational and regression analysis. Simultaneous regression analysis resulted in beta weights that indicated emotional support (B = .24) and instrumental support (B = .19) independently related to differences in students’ SWB. Emotional support includes perceptions of trust and care, while instrumental support include provisions of tangible assistance such as time, skills, services, or resources to help someone in need. The results obtained by Suldo and his team suggested that students’ perception of these two types of support from teachers were most highly related to students’ SWB. Focus group data was coded using a grounded theory methodology. Analysis was open-ended and resulted in the development of themes that related to teacher interest and involvement in student wellness beyond academic progress; use of best practice teaching strategies; acknowledgement of academic success; fairness of teacher support; and an environment that encourages questions. Four themes that were mentioned most often included being sensitive and responsive to the class’s understanding of academic material, using diverse teaching strategies, providing feedback on student performance, and creating an environment in which questions are encouraged. The
researchers concluded that teacher support for adolescents’ social-emotional wellness is important to prepare them to meet challenges successfully.

After a consideration of student perception related to factors that contribute to successful outcomes at the secondary school level, it is beneficial to consider the perceptions of other educational stakeholders regarding successful RTI implementation. A qualitative investigation by Sansosti, Noltemeyer, & Goss (2010) explored the perception of high school principals regarding both the importance and current availability of RTI practices within their respective schools. The participants in this investigation were drawn from an email distribution list representing secondary school principals from across the United States. These principals were all members of the National Association of Secondary School Principals (NASSP). Survey responses were received from 482 participants, constituting a 46% response rate. Of the 482 respondents who completed the survey, 467 were secondary principals (97%), 9 were assistant/vice principals (1.9%) and an additional 1.2% was categorized as “other.” Only responses from principals and assistant/vice principals were analyzed. Of the total number of participants, 61% had been a principal for 5 years or less; the remainder of respondents (39%) had 6-10 years of experience. Participants responded to a survey instrument developed to assess two major dimensions: perceived importance of RTI practices and actual availability to implement RTI practices. This is based on the research of Fullan (2007) which indicates that successful implementation requires both knowledge and available skills to implement. Eight scales representing domains critical to RTI implementation were identified and 3-6 items were created for each domain. Participants responded to each item using a 5 point Likert scale. Each item generated two responses, one for perceived importance and one for actual availability. Data analysis consisted of the use of Cronbach’s alpha to evaluate internal consistency of the survey
instrument (perceived importance dimension .97; actual availability dimension .90). Percentages of responses for each of the introductory items were calculated. Overall, participants reported average knowledge of RTI, believed that RTI implementation in their schools would be difficult and require many changes, and perceived RTI implementation as being more difficult in secondary schools versus elementary schools. Using the Wilcoxon signed-ranks test, significant differences between perceived importance and actual availability were identified. Perceived importance of communication (.95), intervention (.93) and accountability (.92) were rated highest. Actual availability of knowledge (.78), beliefs (.76) and accountability (.72) also received the highest rankings.

It can be interpreted that there is a discrepancy between what is perceived to be important for RTI implementation and what resources and organizational structures are readily available to aide in implementation. For example, use of intervention was perceived as the highest importance, but one of the lowest components actually available. Accountability systems, perceived to be of high importance, were also not readily available. It appears that secondary school principals see the importance for RTI implementation at the high school level, but find it difficult to put into practice due to limiting factors of the high school environment. Results from this survey research should be interpreted cautiously however, since the respondents may not have been representative of the entire sample and self-reporting measures leave some uncertainty as to the actual match between reported perceptions and actual availability.

Another qualitative focus group study by Sansosti, Goss, and Noltemeyer (2011) investigated perceptions of special education directors regarding RtI implementation in secondary schools. Specifically, the researchers desired to obtain a better understanding of the current barriers, facilitators, roles, and practices related to RtI implementation at the secondary
level. Special education directors from 20 randomly selected public secondary schools were invited to participate in one of three focus group settings. In all, 17 participants attended two focus group sessions and shared their responses to nine open ended questions about RtI implementation. Characteristics of participating schools were matched within a few percentage points to state average in the areas of ethnicity, economic disadvantage, and graduation rate. According to survey data on their professional background, the participants had a mean of 17 years of experience, with a range of three to 35 years, and represented a variety of education related backgrounds. A majority of all participants were currently involved in RtI implementation, were knowledgeable about RtI topics, and had positive or strongly positive experiences with RtI. Ninety minute focus groups were conducted by two different moderators. Each moderator was accompanied by a graduate assistant. Roles for moderators and assistants were established in advance, with an integrity checklist completed to ensure procedural reliability. All responses were recorded on audio with key points written. Data analysis involved a “long table” approach to analyze the written transcripts of the audio recording. Responses were assigned a categorical descriptor through discussion and consensus. As statements were coded, they were cut from the document and sorted into labeled categories under each question. A summarization document was created and overarching themes were constructed: (a) systems structures, (b) roles and attitudes, (c) evidence-based practices, and (d) training and professional development.

Analysis revealed that although many secondary school system structures were perceived barriers to implementation, including the master schedule, required courses/content, and lack of teacher collaboration; the presence of a district leadership team, small school size, and increased options for co-teaching would potentially facilitate secondary school RtI implementation. Roles
and attitudes of stakeholders, including a focus on management rather than instructional leadership, a focus on content delivery rather than student learning, and a focus on special education eligibility rather than intervention would impede implementation. Participants noted the need for a shared, long-term commitment to RtI in order to reap maximum benefits. Evidence-based practices appropriate to secondary school students and professional development for all staff using a coaching model were overwhelmingly noted as facilitators for RtI implementation, yet were not seen to be readily available. Sansosti, Goss, and Noltemeyer’s results indicate that the potential for successful RtI implementation is dependent upon connecting research and theory to school and classroom practices. This practical application is currently limited at the secondary school level, but essential components are emerging and will be strengthened with administrative support and collaboration among stakeholders.

**School-wide positive behavior support in high schools.** A Response to Intervention model addresses student behavior as well as academic needs. School-wide Positive Behavior Support (SWPBS) is designed to promote positive teaching and learning climates supporting positive social behavior and academic achievement. Like RTI implementation, SWPBS has received limited attention as the high school level as well. A mixed quantitative and qualitative research investigation by Flannery, Sugai, and Anderson (2009) studied critical factors for the implementation of SWPBS at the secondary level. Participants in this study included 43 survey respondents from schools across the nation who has been implementing SWPBIS for at least one year. Sixty eight percent of respondents had been implementing for less than 3 years, and 55% had been implementing for less than 2 years. Schools varied in size from fewer than 1,000 students (39%) to more than 1,500 students (28%). A majority of schools were located in suburban settings (n=17), while 11 were from urban areas and 15 were located in rural settings.
Participants responded to the Survey of Positive Behavior Support Implementation in High Schools. This survey consists of five areas: school demographics, staff participation and support, expectations and types of acknowledgement, leadership team membership, and priorities for the year’s action plan. These results were communicated as percentages of those responding. Additionally, participants were asked to identify both supports and challenges to implementation. This qualitative information was summarized and described in the discussion of results.

Respondents were asked to report their three top priorities for their team. Establishment of school-wide discipline systems (41%), securing commitment from a majority of the staff (14%), establishment of a leadership team (7%), and review of data for making decisions (75%) were among the factors teams identified as being top priority.

Results indicate that SWPBS is still in its initial stages in high schools. A significant challenge identified by many respondents was securing a sufficient level of staff buy-in for the initiative. Information from respondents suggests that essential factors for implementation include active administrator support, faculty buy-in, student participation in the SWPBS initiative, the use of a student acknowledgement system and commitment to enforcement of school-wide expectations, and a system for data-based decision making. Results of this study should be interpreted cautiously due to possible sampling bias, small sample size, and lack of psychometric evaluation of the survey instrument.

A qualitative mixed method study by Bohanon et.al (2006) investigated the nuances of school-wide positive behavior supports in an urban high school, specifically the considerations that would affect modification of PBIS implementation at the secondary school level and the impact of a high school PBIS model on school discipline outcomes. Over the course of a three year evaluation, the researchers initiated and implemented a PBIS model in a high school in the
Chicago Public School System. The high school served approximately 1,800 students with a high level of racial diversity and socioeconomic need. During Phase I, a needs assessment was conducted, potential team members were identified, sources of quantitative data were identified, and unstructured interviews and observations were conducted with staff members. Information on PBIS was presented to all staff to show how PBIS implementation could address identified concerns. As a result, permission was granted to the university research team to form a discipline leadership team and conduct a more formalized assessment. During Phase II (year 2), using the process measures of the School-wide Evaluation Tool (SET) and the Effective Behavior Support (EBS) Survey, Bohanon and his team measured initial implementation efforts to establish a baseline description and reviewed Office Discipline Referral (ODR) data to identify priorities for change. Results were presented to staff, and an action plan was developed to guide the building staff in selecting evidence based practices. Ongoing training was provided to staff members where “action teams” worked to design the plan for implementation. Trial implementation was conducted with 100 summer school students to prepare for full school-wide implementation in the fall. In full implementation (year 3), continued training and professional development was provided for staff, and ongoing monitoring of data was conducted by the leadership team with results presented quarterly to the entire staff. Components of PBIS were implemented, including establishing and teaching expectations and a student acknowledgement system. Researcher data analysis involved chunking and coding information obtained through interviews and field notes with credibility supported through triangulation and member checking. Results were obtained from the SET and compared to the EBS results which measured staff perception of implementation. Discipline referral data was also analyzed for reductions in ODRs overall (20% reduction from year 2 to year 3), the change in ODRs for specific behaviors
(serious disobedience went from 1.64 per 100 students in year 2 to 0.05 per 100 students in year 3), and the change in proportion of students with problem behaviors (21% of students in year 2 and 16% of students in year 3 had 6 or more ODRs which was statistically significant using a Pearson’s chi square, \( \chi^2(3, N = 150) = 53.199, p = .000 \)). From the results obtained, the researchers found that PBIS implementation at the high school level faces some challenges and requires modification of (1) the school-wide acknowledgement system, (2) the teaching behaviors in a high school setting, (3) logistics of implementation, (4) enacting consistent policies the address behavior, (5) modifying ODR forms to track data. Bohanon and his team concluded that understanding training needs and tying the process in to staff priorities assisted with staff buy-in to the process of implementation. Advance planning and staff input into the process were also important, as was the use of a leadership team to guide implementation. Finally the use of data to guide decision making during the process was instrumental to facilitate implementation.

**Secondary school intervention programs.** While several research-based interventions exist for use at the elementary level, fewer research-based interventions have been identified and implemented specifically with students in secondary school settings. Cleary, Platten, and Nelson (2008) suggest that interventions to help students become more active, strategic participants are necessary at the high school level. Their mixed-model research design, consisting of case studies embedded in a pretest-posttest methodology, sought to examine the effectiveness of the Self-Regulation Empowerment Program (SREP) to enhance the academic performance, self-regulatory skills, and motivation of students in an urban high school setting. Self-regulation, as defined by Cleary, Platten, and Nelson, “involves self-generated thoughts, feelings and behaviors that are planned and cyclically adapted based on performance feedback in order to attain self-set
goals.” Participants in this study were ninth grade students who were all comparable across demographic and academic variables and exhibited below average biology test scores (Mean < 75). During the 11 week intervention, both groups met for 23 sessions. The 2 comparison group students received a less-intensive and structured traditional tutoring program where strategic supports were provided only as needed, while the 5 students in the SREP intervention were instructed by a trained graduate student tutor in a flexible standard protocol program that emphasized goal setting, planning, learning strategies, and self-reflection on performance. All program lessons were sequenced to include direct explicit instruction, teacher modeling, and guided practice components. Descriptive and normative analysis of student test scores indicated that the SREP intervention group exhibited a higher intervention test score average (M = 83.3) than the class average (M = 80.6) with a gain score for the SREP group of 13 points and a gain score for the class average of 3 points. In contrast, the SREP comparison group obtained scores that were substantially below class averages at baseline (M = 55.5) and during the intervention (M = 51). Reliability Change indices were used to examine pretest-posttest changes in the SREP intervention group’s use of self-regulation strategies and motivation beliefs. Results indicate that the SREP intervention students exhibited a clinically significant rate of change across managing environment and behavior, RCI = 2.26, p < .01, seeking and learning information, RCI = 2.26, p < .05, and maladaptive regulatory behaviors, RCI = 2.24, p < .05. Field notes and microanalytic questions were highly consistent with student self-report of strategy use. Students generalized and spontaneously initiated strategy use in multiple contexts. They also reported that they attributed their improved test performance to the strategies being taught in SREP. Based on the convergence of quantitative and qualitative data in this study, Cleary, Platten, and Nelson concluded that SREP is a promising intervention for improving the academic and regulatory
functioning of high school students. It is suggested that getting students to become more active, strategic participants in their learning by teaching them empirically supported learning strategies as well as forethought and reflective thinking skills is important to their future academic success. Care should be taken in generalizing the results of this study due to its small sample size and highly selective nature of the sample selection. The lack of a pure control group and use of student self-reports and teacher rating scales as measures of self-regulation strategy use and motivation may have further limited the ability for generalization.

A research study by Brigman, Webb, and Campbell (2007) addressed the impact of a school counselor-led Student Success Skills (SSS) program on the academic and social competence of secondary school students. A randomized comparison group design compared the achievement outcomes of 220 students from grades 5, 6, 8, and 9 in twelve public schools in Florida. The students came from similar socioeconomic backgrounds and gender was represented equally. A majority (70%) of participants identified as either Black or Hispanic. Students were randomly selected based on achieving scores between the 25th and 50th percentile on the Florida Comprehensive Assessment Test (FCAT). Math and Reading scores from the FCAT and a teacher rating of classroom behavior were used as the dependent variables. Students were assigned to the control or treatment condition of counselor intervention using the SSS program. An analysis of covariance was used to examine FCAT results to account for differences between treatment students and comparison students at the beginning of the study. In treatment schools, the SSS curriculum was implemented in both classroom and small group formats for the first 8 weeks of the school year with four follow-up booster sessions spaced throughout the school year. The intervention focused on cognitive, social, and self-management skills that are related to improved academic achievement. Teachers were encouraged to
reinforce these strategies throughout the year in the classroom as well. An analysis of covariance was conducted to compare the performance trends of treatment and comparison group students in reading and math FCAT achievement following the SSS intervention. The ANCOVA detected a significant difference ($p = .003$) between treatment and comparison students in math scores, but not in reading. A moderate effect size ($d = .45$) indicated that those students in the treatment group had improved math test scores of about a half of a standard deviation compared to students in the control group. Behavior rating scales showed that 60% of treatment students improved rated behaviors. The average amount of improvement was 18 points. Brigman, Webb, and Campbell concluded the SSS program was successful for improving academic achievement and behavior. The results suggested that intervention programs that focus on developing academic, social, and self-management skills lead to gains in student achievement. Further, it may be suggested that the collaborative structure of the SSS implementation improved implementation and lead to increased teacher investment in using the intervention in their classroom, thus increasing frequency.
Chapter III: Results and Analysis Relative to the Problem

Response to Intervention implementation efforts have been occurring at some level in most school districts across the country. As RTI models continue to be refined, questions have surfaced regarding the essential components that are necessary for effective implementation that will provide the greatest positive impact on student achievement. If RTI is thought of as a framework to enhance the learning of all students, not just those that are struggling, then it is necessary to consider systems level issues that will lead to continuous school improvement (O’Connor & Freeman, 2012). RTI implementation requires significant school reform; it is a process that is incorporated throughout a district which drives all educational decisions (O’Connor & Freeman, 2012).

Response to Intervention processes often initiate due to staff frustration with traditional models of support services which are delivered primarily after students have already fallen far behind their peers in academic performance (White, Polly, & Audette, 2012; Rinaldi & Stuart, 2009). Initial attempts must be carefully fostered to build staff buy-in that is essential for ongoing implementation (Flannery, Sugai, & Anderson, 2009; Orosco & Klingner, 2010). As staff buy-in to the culture of RTI, the level of quality implementation increases. Experience with RTI implementation and successful outcomes for students impact staff perception in a positive manner (Bohanon et. al., 2006; Nunn & Jantz, 2009), helping to ensure continued implementation and lead to a student centered culture. Research on responsive high schools identifies the conviction that a focus on student well-being and high expectations for student performance are necessary to create and maintain a supportive environment for learning at the secondary school level (Renihan & Renihan, 1995).
Leadership

Leadership is an essential component for successful RTI Implementation at any level. Leadership is critical in creating staff consensus, delivering professional development, implementing evaluation procedures, allocating resources, making data based decisions, and creating sustainable processes (White, Polly, & Audette, 2012; Lau et. al., 2006; Fagella-Luby & Wardwell, 2010; Flannery, Sugai, & Anderson, 2009). Strong principal-led initiatives will help to develop a common vision and bring it on to reality. School administrators need to have knowledge of the principles, practices, and rationale of RTI implementation (O’Connor & Freeman, 2012). Knowledge of the theoretical basis behind implementation supports district and building administrators as they work to facilitate a student-centered building culture and develop accountability measures for staff and programming.

In addition to administrative leadership, a steering committee, commonly referred to as an RTI Leadership Team, needs to be established to guide implementation (Flannery, Sugai, & Anderson, 2009; Bohanon et. al., 2006; Koselak, 2011). The development of a leadership team increases staff buy-in for RTI implementation (White, Polly, & Audette, 2012). This leadership team performs as a professional learning community with a shared vision for RTI implementation. The team’s priorities are to study and plan collaboratively for implementation, embed processes for data-based decision making across tiers and systems, establish a tiered model of intervention, and communicate the plan for implementation to district stakeholders (Koselak, 2011).

Professional Development

Research supports the need for authentic, embedded, and sustained professional development with teacher coaching and modeling to increase student progress (White, Polly, &
Audette, 2012; Lau et. al., 2006; Pelham et. al., 2005; Pearce, 2009; Ardoin, Witt, Connell, & Koenig, 2005; Orosco & Klingner, 2010; Sansosti, Noltemeyer, & Goss, 2011). Teacher knowledge base regarding RTI principles and features is often limited, and the learning curve necessary for successful implementation is steep. Professional development for RTI implementation cannot be limited or isolated from practitioners’ actual day to day reality. Quality professional development will increase staff capacity which will then improve program implementation (Pelham et. al., 2005).

**Data and Assessment**

Data based decision making is the key mechanism by which RTI functions in a school (Rinaldi & Stuart, 2009; Pelham et. al., 2005; Pearce, 2009; Flannery, Sugai, & Anderson, 2009; Bohanon et. al. 2006). It must guide the work of all systems and structures if the school is to establish a culture of continuous improvement. Improved data collection and analysis can lead to improvements in instruction and intervention which in turn increase student achievement (White, Polly, & Audette, 2012). At all levels, data collected in an RTI system informs systemic needs and priorities for improvement, screens for intervention, diagnoses instructional needs, and monitors progress. At the secondary school level, existing assessment results may serve as the best screening instrument for identifying students in need of intervention (Fuchs, Fuchs, & Compton, 2010). Identification of academically challenged students via the use of consistently low achievement profiles saves staff from unnecessarily administering additional assessment in secondary school settings where assessments and testing already abound. If screening is conducted at the secondary school level, it is most likely necessary to shift the focus to vocabulary knowledge and comprehension skills as the best measures due to the importance of these component skills at the older grade levels (Hale, et. al., 2011). Further diagnostic
assessments are necessary after identification to develop and intervention profile that will best meet the needs of each individual student (Dennis, 2009; Feldman, 2004). Progress monitoring is essential at all levels, as it informs instruction (Orosco & Klingner, 2010; Rinaldi & Stuart, 2009). At the secondary school level, progress monitoring allows for responsive instruction for students with years of accumulated and sizable academic and/or behavioral deficits.

**Considerations for Instruction and Intervention**

The research literature is filled with references to need to utilize research-based methods of instruction and intervention in an RTI framework (Rinaldi & Stuart, 2009; Pelham, et.al. 2005; Fuchs & Fuchs, 2006; Vaughn et. al., 2007). Tiered systems of instruction and intervention are supported as the mechanism to provide increasingly intense instruction to meet student need (Pearce, 2009). At Tier 1, content area teachers need to integrate literacy practices in their daily instruction to prevent the over-identification of students for Tier 2 intervention (Brozo, 2009; Feldman, 2004; Vaughn & Fletcher, 2010). The use of diverse teaching strategies in the general classroom, along with sufficient feedback and the opportunity to ask questions, have been identified as critical to students’ sense of well-being and ability to achieve.

The RTI framework is often viewed as two basic approaches to intervene and measure responsiveness: standard treatment protocol (STP) or a problem-solving team (PST) approach. Practitioners conducting RTI typically list a PST approach as one of the essential factors to RTI implementation (Lau et. al. 2006; White, Polly, & Audette, 2012; Orosco & Klingner, 2010). Researchers, by contrast, favor the use of standard treatment protocols (Fuchs & Fuchs, 2006; Vaughn et. al., 2010; Vaughn & Pyle, 2012). Many schools implement components of both models, using primarily the STP for Tier 2 interventions and the PST approach for students who demonstrate more resistance to intervention efforts (Vaughn et. al. 2010). Whichever the
intervention model chosen, some special considerations may be necessary for students identified for intervention at the secondary school level. Unlike elementary level interventions, in which the goal is to intervene quickly and return the student to Tier 1 instruction, secondary school students may remain at higher tiers of intervention for ongoing support (Vaughn et. al., 2010; Vaughn & Pyle, 2012). This level of intense intervention may be necessary to keep older students from showing decreases in performance due to the impact of their performance gap as academic demands increase. In fact, it may be necessary to turn the RTI pyramid on its head when considering the needs of secondary school students; consider placing them in the highest levels or tiers of intervention and allow them to work their way down the pyramid as the performance gap narrows (Vaughn & Pyle, 2012; Fagella-Luby & Wardwell, 2011).

When considering interventions and intervention provision, it is necessary to identify evidence-based instructional interventions that are easily implemented by practitioners (Ardoin et. al., 2005). Interventions are already perceived to be lacking or not easily accessible at the secondary school level (Sansosti, Noltemeyer, & Goss, 2010; Sansosti, Noltemeyer, & Goss, 2011). This underscores the importance of surveying for evidence-based practices which are currently being implemented in the building or district. If interventions are too unwieldy to implement or difficult to manage, there is a greater chance that they will not be utilized in the classroom for either Tier 1 or Tier 2 level instruction. Targeted instruction, provided by teachers with the highest levels of instructional skill and training, should focus on the use of direct instruction, modeling and think-alouds, guided practice, and consistent targeted feedback (Fagella-Luby & Wardwell, 2011; Bohanon et. al., 2006). Students, especially at the secondary school level, need to be actively involved in their learning and intervention plan. Struggling older learners inevitably come to the table with considerable attitudinal “baggage” from years of
failure, frustration, and negative experiences with school. The use of strategy instruction that teaches these students how to learn, encouraging students to monitor and reflect on their performance, and development of self-management skills leads to gains in student achievement (Cleary, Platten, & Nelson, 2008; Brigman, Webb, & Campbell, 2007).
Chapter IV: Recommendations and Conclusion

Increasingly, students at the secondary school level are being pushed to achieve higher levels of academic proficiency to meet curriculum demands and exit high school with the skills necessary for career and college readiness. Student learning and achievement are impacted by a variety of factors. There is significant evidence that the many of the components found in a comprehensive Response to Intervention framework will substantially impact student achievement in a positive manner. To realize the greatest gain in student achievement, RTI must be effectively implemented. Since all components cannot be implemented simultaneously, attention should be given to those that will have the greatest return on investment of time, energy, and resources. Schools desiring to achieve effective implementation may consider factors related to leadership of the initiative, professional development for staff, assessment and data management, and instructional programming and methodology. Some studies show that careful planning and integration of these components into systems operation can lead to increased levels of student proficiency.

Recommendations

Obtaining staff consensus around a new initiative may not always be possible. New ways of thinking and doing business at the systems level requires a paradigm shift that all staff may not be ready to embrace. Changing any culture is difficult because it involves deeply rooted traditions and beliefs that have been developed over many years. This may especially be true at the secondary school level. It is sometimes more helpful for staff to act their way into thinking rather than think their way into acting. It may be beneficial for district/building administration to identify a core group of staff that are highly committed to this initiative and support their efforts through the formation of an RTI leadership team. Administrative leadership can collaboratively support the implementation of models and plans developed by this team and bring them into
focus as primary initiatives. Shifting culture may also be accomplished through identification of expectations for staff in district policies and teacher evaluation rubrics. While there will be time and effort expended in the development of these mechanisms, they are low cost and over time they can lead to a cultural shift as they are consistently reinforced as expectations for district operations.

Professional learning communities have become a popular method for fostering teacher collaboration and study of new methods and processes to support student achievement. Staff professional learning communities are often a preferred mechanism for professional development as they allow opportunities for collaboration, consultation, and coaching (Rinaldi & Stuart, 2009; Koselak, 2011). District leaders should consider the use of teacher PLCs to study strategies that will support RTI implementation. Master teachers or secondary school department heads or curriculum specialists can facilitate these communities of practice, which builds capacity among district staff. Program implementation is typically improved due to the ownership inherent in this type of authentic, embedded professional development. PLCs are relatively inexpensive compared to sending staff to conferences or bringing in specialists to conduct “one-shot” professional development, and once the format is established, PLCs often become self-sustaining.

Systems of data collection and analysis can be established through the PLC process. Districts do not necessarily need to administer additional assessments to obtain this data at the secondary school level. Existing assessment results from state and district assessments can be analyzed to inform instructional grouping or the need for students to be scheduled into intervention or support classes. It would be beneficial for districts to utilize longitudinal data warehouse systems to aid them in this process. Although this may cause districts to incur
additional costs to obtain a data system if one does not currently exist, the savings in time and effort are well worth it.

Research based instructional strategies can be an effective use of time and effort if implemented with fidelity. Consideration must be given to the effort and time associated with identifying which interventions to select for use with groups or individual students. This is further compounded by the possible need for ongoing adjustment based on student response to the intervention. While interventions are seen as important at the secondary school level, they are often not perceived as being readily available. Districts can survey current intervention practices implemented in individual classrooms and identify those that are effective based on data analyzed in teacher PLCs. Implementing interventions that are recommended by teacher PLCs can have the advantage of increased probability of sustained implementation due to teacher ownership. Use of a problem solving protocol, while favored by many practitioners, may be difficult to immediately implement due to the level of expertise required by staff for it to operate in a manner that truly impacts student achievement at a Tier 1 level. Standard treatment protocols and interventions can be easier to implement at Tier 2 and 3 since they are a packaged program, but they are often not flexible enough to meet the needs of all students and can be costly to purchase. Strategy instruction is mentioned as a potentially effective intervention consideration for secondary school students. Teaching students flexible methods to organize their acquisition, storage, and expression of knowledge may provide a greater impact than packaged intervention programs.

When considering the best practices for intervention with adolescents, it is beneficial to consider a whole school model (Vaughn & Pyle, 2012). Secondary school structures, such as the need to gain credit towards graduation requirements, the complexity of the master schedule, the
focus on content, and the departmentalization of staff are often seen as barriers to RTI implementation (Sansosti, Noltemeyer, & Goss, 2011; Koselak, 2011). The Content Literacy Continuum is a framework designed as a school-wide approach to address the content literacy needs of students in middle, junior, and senior high schools (Ehren, Lenz, & Deshler, 2004). Content literacy is defined by Deshler (2004) as the listening, speaking, reading, and writing skills and strategies needed by students to learn in each of the academic disciplines. Its purpose is to narrow the achievement gaps experienced by low achieving adolescents through the use of research-based literacy practices and learning strategy instruction. It is organized around five levels of instruction/intervention that increase in intensity as required by student needs. Planning and adoption of the CLC are rooted in continuous school improvement processes and revolve around ongoing coaching, consultation, and professional development for implementation of the content enhancement routines and learning strategies (Ehren, Deshler, & Graner, 2010). The CLC has great promise as an implementation framework for RTI in secondary schools.

Areas of Further Research

A significant amount of Response to Intervention research has been focused on the development of frameworks and systemic processes at the elementary level. However, a significant percentage of students at the secondary level continue to struggle with demonstrating adequate achievement and remain in need of ongoing supports and interventions due to a large performance gap. Many teachers and administrators question the feasibility of implementing an RTI model at the secondary school level. The literature review in this document covered components of an RTI framework which may be key to successful implementation at every level as well as factors to consider when revising the components for secondary school implementation. However, a gap in research exists on available and appropriate interventions for
Research should be conducted on the effects of the use of Content Literacy Continuum content enhancement routines and strategy instruction relative to improving student academic achievement. The study could be conducted in a school district where a teacher has more than one section of the same class, for example two English 9 courses. One English 9 course would be taught using content enhancement routines, and embedded strategy instruction while the other class would be taught in a traditional method. Tier 2 instruction for students in both sections would be provided for students identified as at-risk based on PLAN/EXPLORE results, which would measure students’ levels of career and college readiness compared to benchmark scores, plotted against their most recent Michigan Educational Assessment Program (MEAP) scores, which would measure their level of proficiency with grade level content. Students enrolled in the course that uses content enhancement routines and embedded strategy instruction to support content mastery would receive more intense learning support opportunities in small groups through the use of elaborated strategy instruction, while the at-risk students in the other section of the class would receive traditional academic supports such as after school tutoring, increased teacher assistance, and remedial assignments. The participants in this study could be increased by having all language arts teachers participate and implement instructional and intervention strategies in one of their sections of sixth-, seventh, eighth-, ninth-, and tenth-grade English classes.

Data that would be collected would be PLAN, EXPLORE, MEAP, and course end test results. The data would be analyzed by plotting student scores on both the PLAN/EXPLORE against their MEAP scores. The PLAN/EXPLORE benchmark score and the cut score from the most recent MEAP administration would act as limits and form the quadrants of the graph, with the MEAP cut score plotted on the horizontal axis and the PLAN/EXPLORE benchmark score
plotted on the vertical axis. Student scores would be plotted as ordered pairs to give each individual student a data point on the quadrant graph. Students falling in the first quadrant would be considered “at-risk” and in need of academic intervention. Students in quadrant two would represent students who had previously been at risk, but had responded to intervention. These students would receive continued progress monitoring. Students in quadrant three would be considered at benchmark and in need of enrichment opportunities. Quadrant four would contain students who had previously been performing at grade level, but who now demonstrate decreasing performance. This graphing of results would allow a comparison of overall student growth from year to year as well as an analysis of individual student improvement and movement between quadrants as a result of successful intervention. The intent of the study would be to determine if students who were enrolled in the enhanced courses and received strategy instruction demonstrated increased improvement rates and higher levels of academic proficiency than students who received traditional instructional and intervention methods.

**Summary and Conclusions**

The continued push for ensuring positive educational outcomes for all students has intensified the need for secondary schools to begin examining how RTI methodologies can be implemented in these settings (Sansosti, 2010). The research suggests that the implementation of various components of an RTI framework will improve student achievement at the secondary school level. The challenge for full RTI implementation in secondary schools is not only in figuring out how to successfully implement all the components of an RTI framework, but how to modify several of the components to best meet the needs of adolescent learners. This review outlined four components that have been found to be essential at all levels: leadership, professional development, data and assessment, and research based instruction and intervention.
The component most often cited as necessary, but not readily available in the secondary school setting are interventions to meet the needs of students performing below expected levels of achievement. Interventions that compliment teacher methodologies and are easily embedded in regular instruction have perhaps the greatest probability of being implemented. A focus on the utility of the interventions for helping students learn how to organize their acquisition, storage, and expression of information is also important. Struggling secondary school students often have years of accumulated academic failure. Interventions utilized with this demographic need to be high impact and address specific academic or skill deficiencies.

Further research is continually needed to collect current data on the best practices to implement RTI in secondary school settings. In comparison to early education, relatively few studies focus on model implementation at the secondary school level. Specific suggestions on practical implementation models and considerations are needed in order to increase the probability that students will leave their high school experience with the skills and knowledge to be self-sufficient adults that will have the capability to achieve future success.
References


Ehren, B. J., Lenz, B. K., & Deshler, D. D. (2004). Enhancing literacy proficiency in adolescents


