TQ Research & Policy Brief

Teacher Preparation for Response to Intervention in Middle and High Schools

September 2009

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Response to intervention (RTI) is a data-based strategy for developing effective interventions related to students' academic and behavioral problems. This TQ Research & Policy Brief describes the preparation of middle and high school teachers to use RTI applications. It also provides helpful information for middle and high school teachers, teacher preparation faculty, and professional development personnel.

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Introduction

Response to intervention (RTI) is a decision-making process for (1) identifying gaps between current and desired results; (2) designing, implementing, and revising interventions; (3) matching the degree of educational needs to the intensity of interventions; and (4) implementing interventions at multiple tiers. The process can be applied to individuals, groups, or systems. RTI is not an intervention; rather, it is a data-based strategy to develop effective interventions and evaluate outcomes. Application of RTI principles significantly enhances the likelihood of resolving common academic and behavioral problems and improving system outcomes. Although knowledge of RTI applications at the secondary level continues to emerge, RTI implementation by secondary-level teachers has significant promise for improving interventions.

RTI applications in elementary schools are generally well known and widely endorsed, but RTI applications in middle and high school classrooms are less well developed and implemented. This TQ Research & Policy Brief describes the preparation of middle and high school teachers to use the RTI process to improve classroom and school results and to achieve the key goals of the Elementary and Secondary Education Act (ESEA), as reauthorized by the No Child Left Behind (NCLB) Act (2002), and the Individuals with Disabilities Education Improvement Act (IDEA, 2004). This brief is intended for teachers at the middle and high school levels and for the university faculty and continuing professional development personnel who educate teachers.

Basic Principles of RTI

Because the purpose of the RTI process is to improve results for students, it works best in education systems that are committed to improving results with all students or specific subgroups of students. Education systems and educators who are largely satisfied with current outcomes are less likely to embrace RTI principles and implement appropriate RTI procedures. The vast majority of education systems and educators are committed to improving current results, however; therefore, RTI is a useful way to approach improving outcomes and making decisions about students' needs and the effectiveness of interventions.

Several RTI models exist (Batsche et al., 2005; Fuchs & Fuchs, 2009; Reschly & Bergstrom, 2009; Vaughn & Roberts, 2007). A major difference among the models is in the approach—one placing relative emphasis on *individual* problem solving and following problem-solving steps, and another delivering to small groups of students *standard protocol* interventions that have well-documented positive effects on closing performance gaps. Both approaches are important, and their use should depend on the nature of the gaps between current and desired performance.

Regardless of the setting, RTI principles are relatively the same. Reschly and Bergstrom (2009) summarize these principles as follows:

- Interventions are delivered through a system with multiple tiers that vary in intensity of intervention and measurement precision (see Figure 1). Although three tiers are typically used, some RTI systems use four or even five tiers. In this brief, a three-tier model is discussed.
- RTI operates within the framework of the overall goals and specific objectives based on priorities established in education, family, and community systems. Most RTI educational goals originate in federal, state, and local standards for academic achievement and in local standards for behavioral and emotional regulation.

- Periodic universal screening in academic skills and behavioral competencies, involving all students, assesses curricular and instructional effectiveness and individual risk status using measures related to socially valid outcomes, such as state and local achievement standards. RTI systems strongly emphasize prevention as well as early identification and treatment for academic and behavioral problems. The National Research Council's report on minority representation states this principle best: "There is substantial evidence with regard to both behavior and achievement that early identification and intervention is more effective than later identification and intervention" (Donovan & Cross, 2002, p. 6).
- Gaps in expected and actual performance levels are the focus of RTI interventions at the individual, classroom, school, and system levels.
- RTI interventions are based on the selection of empirically validated interventions in the domains of academics, behavior, and emotional regulation; matched to student needs; and implemented over a sufficient period of time to produce significant changes in student competencies. These generally effective interventions typically are based on either experimental studies comparing treatments or results from multiple single-subject studies.
- Implementation fidelity (i.e., implementing interventions as designed) is essential to improved student outcomes in RTI systems. Poor implementation fidelity accounts for the failure of many interventions across multiple domains including education, social services, and medicine.
- Frequent progress monitoring is essential because even the best scientifically based interventions do not always produce the same results with all students and classrooms. Progress monitoring involves the use of appropriate measures directly related to the intervention goal(s), comparison of results to goals through graphs or other devices to facilitate analysis of results, and formative-evaluation decision rules that specify changing interventions (if results do not meet goals) or raising goals (if results exceed goals).
- Intervention results produced in the RTI process are used in educational decision making. Depending on the RTI model as well as state and local requirements, RTI results should be used in decisions about student needs; intensity of

Figure 1. Multitiered System With Tiers Varying in Intervention Intensity and Measurement Precision

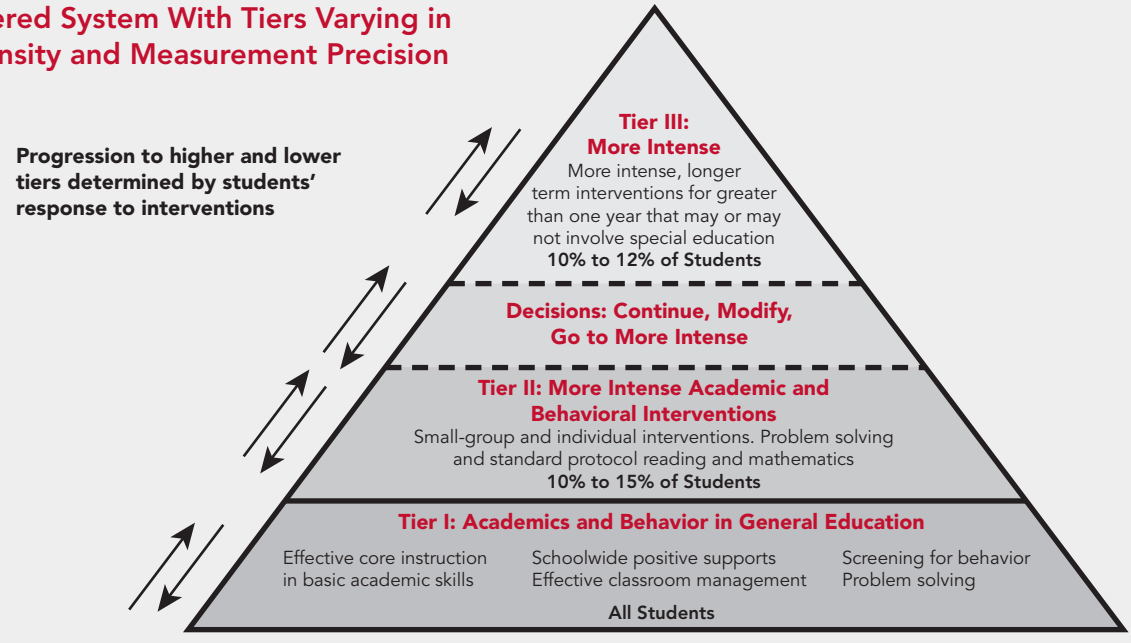


Figure developed by Daniel J. Reschly, Ph.D., Susan M. Smartt, Ph.D., and Regina M. Oliver, based on the work of Sugai, Horner, and Gresham (2002)

instruction; frequency of measurement; changes in instruction or interventions; disability diagnosis and special education eligibility; progress in special education; and continuation, revision, or cessation of special education services.

- Decisions to move toward more or less intensive interventions should be based on RTI results.

Problem Solving

A problem-solving process is nearly always the foundation of RTI applications at the secondary level. In contrast, standard protocol interventions for basic academic skill deficits are used frequently at the elementary level as well as for problem solving (Vaughn & Roberts, 2007). Problem solving and RTI are not the same. RTI is defined by multiple tiers of increasingly intensive interventions and the principles listed in the preceding section; problem solving is a set of more specific techniques to address discrepancies between current and desired outcomes. Problem-solving or parallel procedures, such as standard protocol interventions (Vaughn & Roberts, 2007), should be used at all RTI tiers. Problem-solving procedures are used at various levels including individual, classroom, school, and system levels.

The basic steps of problem solving are the same at all levels. In short, the strategy is to (1) define the problem and measure current status; (2) establish goals and develop an intervention plan; (3) implement the plan with fidelity; and (4) assess progress frequently and evaluate results. RTI and this problem-solving process have been used to improve performance related to a wide range of academic and behavioral goals in middle and high schools. Some examples of the goals are engagement in classroom instruction; accuracy and completion of homework; higher achievement on daily, weekly, and unit assessments; improved attendance; reduced behavioral problems; and increased high school completion (Alberto & Trotman, 2008; Shinn & Walker, in press; Sulzer-Azaroff & Mayer, 1991). The key is to follow the basic steps to improve performance.

Problem solving at different RTI tiers varies in intensity from a simple, single-event process of defining a problem in terms of a discrepancy between existing and desired levels of performance to brainstorming possible interventions, implementing one or more interventions, and evaluating results (see Figure 2). Single-event problem solving should be mastered by teachers and others involved with Tier I general education interventions. More intense forms of problem solving are used as necessary, ranging from applying the four-step process over several weeks to experimental analysis of the motivating operations associated with particularly complex and persistent behavioral problems (Steege & Watson, 2008). Generally, more intense problem solving involves increased measurement precision and more complex and intense interventions. The intensity of interventions is defined by the complexity of the intervention and the skill set needed to design and implement the intervention as well as the amount of time required to produce significant results. Problem severity, complexity, and resistance to standard interventions also determine the intensity of problem-solving operations (Tilly, Knoster, & Ikeda, 2000) and the role of participants in the problem-solving process.

Figure 2. Heartland Area Education Agency Single-Session Problem-Solving Model

Reprinted with permission from Program Manual for Special Education *(2006). Johnston, IA: Heartland Area Education Agency 11, 6500 Corporate Drive, Johnston, IA 50131 (p. 102).*

More intense problem solving is expected at Tiers II and III. The problem-solving model developed originally by Bergan (1977) and expanded by Upah (2008) should be used at Tiers II and III. General educators with specialized roles (e.g., reading and mathematics coaches, remedial reading teachers), special education teachers, and other personnel (e.g., counselors, speech/language clinicians, school psychologists) involved with Tier II and Tier III interventions should master competencies associated with the more intensive components of problem solving depicted in Table 1. Specialists such as behavior consultants and school psychologists should be competent in the most intense problem solving in schools using experimental and functional analysis of behavioral procedures with complex and persistent problems.

Some students considered for problem solving at the secondary level have presented academic, social, or behavioral concerns for many years. As a result, some schools and districts invite the participation of outside professionals who may have knowledge of the student to participate in the problem-solving process or to provide information about the student that is important to consider in designing interventions.

Differences Between Elementary and Secondary RTI

Although various models of RTI exist in middle and high schools, when they are compared with RTI applications at the elementary and preschool levels, both similarities and differences emerge (Shinn, 2008). One difference is the availability of "off-the-shelf" assessments that can be used to assess academic progress. Several sources exist for curriculum-based measures in reading, mathematics, spelling, and written language (Good & Kaminski, 2003; Pearson Education, 2009; Office of Special Education Programs, n.d.), which can be applied readily in most elementary classrooms. Some of these measures also are relevant to middle and high school students with very low skill levels.

Table 1. Problem Solving: Stages and Components

Stage 1. Problem Identification
Behaviorally define concern.
Collect current status data.
Establish tentative goal for change.
Stage 2. Problem Analysis
Validate existence of problem with data and establish challenging but achievable goal; establish graph.
Analyze conditions (skills versus performance): alterable conditions in the school setting and classroom environment that will enhance academic and behavioral instruction effects.
Select evidence-based intervention(s) using available resources.
Design intervention plan (prompts and props) and determine responsibilities.
Stage 3. Plan Implementation
Conduct treatment integrity checks.
Monitor progress and, as indicated, revise intervention plan or goals.
Stage 4. Evaluation of Results
Compare results to goals.
Decide next step: Continue, modify, fade, or discontinue plan.
If indicated, consider more intense interventions.

Sources: Bergan and Kratochwill (1990); Upah (2008)

For example, curriculum-based measures of oral reading fluency are useful with middle and high school students who are still struggling with word identification and reading at a sufficient speed and with sufficient accuracy to support comprehension. Most of the currently available curriculum-based

measures are less useful for middle and high school students struggling with vocabulary limitations or weak comprehension strategies. Further development of middle and high school curriculum-based measures is under way (Foegen, 2008).

RTI applications at middle and high school levels often require the development of measures that are specific to a particular classroom or school. In other cases, smaller components of an overall education outcome are used (e.g., daily and weekly quizzes with a goal of improved unit-test performance, improved course completion, or improved high-stakes test results). Behavioral screening at the high school level frequently includes naturally occurring data (such as behavioral infractions) using the existing school coding scheme and disciplinary referrals. Monitoring individual and group patterns of behavioral issues with the naturally occurring data serves as a way to identify problems and as a consideration when designing interventions.

Another major difference between school levels is the initial determination of special education eligibility. Most students who participate in special education programs at the high school level were identified at earlier school levels, most often in Grades 3 through 6. Although RTI procedures can be used for eligibility determination with specific learning disabilities (IDEA, 2004, 34 C.F.R. 300.309; Reschly & Bergstrom, 2009), they rarely are used for this purpose at the middle and secondary school levels.

Students at the secondary level often participate directly in problem-solving activities, another difference from applications at earlier school levels. Direct participation can increase motivation to improve, leading to better intervention design and greater commitment to intervention implementation.

Levels of Problem Solving and RTI Applications

Problem solving and RTI are implemented at various levels in education systems—including individual, classroom, school, and system levels. Three extensive examples are described in this section. Although the examples are hypothetical, multiple school districts currently are using the interventions illustrated here. Each applies basic problem-solving principles.

Teacher Implementation of Problem Solving in the Classroom

Teachers in individual classrooms produce improved results by applying problem-solving and RTI principles to performance gaps in academic, behavior, and emotional regulation domains. Consider this problem. A ninth-grade high school English teacher is concerned about disruptive behavior in her classroom, particularly by male students. She might write off these students as simply uninterested, resistant, and intractable, and attempt to ignore them unless conditions get too bad, in which case one or more students are sent to the principal's office. Negative consequences of this choice accrue to all participants: The disruptive students are less likely to complete the course with a passing grade, increasing the likelihood of noncompletion of high school; learning opportunities for other students are compromised; and the teacher is annoyed daily by the disruptive behavior. Anyone with teaching experience in a classroom that has a high level of disruptive behavior can confirm how annoying and punishing the environment becomes for the teacher. Problems with managing classroom behaviors contribute significantly to teacher attrition (Borman & Dowling, 2008). What is the alternative?

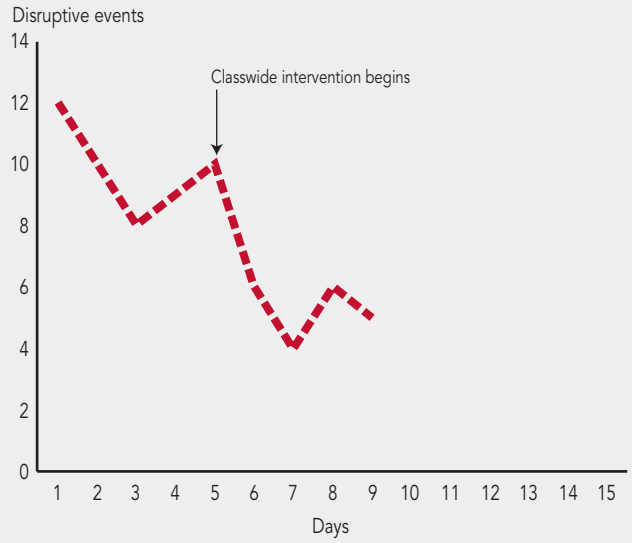
The teacher in this example knew problem-solving strategies based on content and experiences in her teacher preparation program as well as a continuing professional development program provided at her school. She understood that the purpose is to develop interventions designed to close gaps between current and desired levels of performance. She engaged in the four-step problem-solving process previously discussed (see Figure 2).

The Process in Detail

Step 1: Define the Problem and Measure Current Status

- The teacher defined the problem as students talking aloud without permission, making noises that disrupt instruction, making excessive delays in complying with requests, and talking with peers during teacher instructions. She believed that the disruptive behaviors were worse at the beginning of class and during transitions, such as handing in homework and moving from one activity to another.
- For one week, data were collected during the beginning of the class period and during transitions. The teacher recorded on a 5x7 card each instance of talking without permission, creating disruptive noise, talking with peers during teacher instructions, and making delays in initiating appropriate behaviors subsequent to requests. She also made note of but did not record behaviors during transitions. Each day, she recorded the total number of disruptive behaviors in her classes. These data were collected each day during the first 10 minutes of class and during at least one transition. Although this data collection procedure is less than ideal, it likely is sufficient at this level of problem solving and, importantly, does not interfere excessively with ongoing instruction.
- Data were analyzed after one week to confirm the existence and severity of the problem behaviors and to establish the foundation for developing a challenging but attainable rate of improvement. A time series analysis graph was established (see Figure 3).

Figure 3. Time Series Analysis Graph of Teacher Problem-Solving Results



Note: "Disruptive events" refers to the number of disruptive events by the entire class during the first 10 minutes of class.

- Analysis of the conditions around the problem focused on the following questions: (1) Are the disruptive behaviors being reinforced? (2) What function do the behaviors serve, such as peer and teacher attention or escape from academic demands? (3) Do the behaviors represent skill deficits (student cannot do the expected behavior) or performance deficits (student can but does not do the expected behavior) (VanDerHeyden & Witt, 2008)? Based on these considerations, the teacher's initial conclusions were as follows: (a) the disruptive behaviors represented performance deficits, not skill deficits; (b) the disruptive behaviors likely were reinforced by both peer and teacher attention; and (c) for some students, the behaviors delayed and occasionally removed academic demands (thereby serving what is called an escape function).

Step 2: Establish Goals and Develop an Interactive Plan

- A goal was established to reduce the disruptive-behavior events over a three-week period to two or fewer events per class period. The same data collection procedure was continued.
- Based on the analysis of the problem behaviors (performance deficits), the teacher considered the design of an intervention to close the gap between current and expected classroom behavior. She consulted two of the many possible resources available to help improve classroom behavior: *Intervention Ideas* (Intervention Central, 2009), an online resource, and *Discipline in the Secondary Classroom* (Sprick, 2006), a print resource. She learned that performance deficits generally are resolved most successfully through clearer communication of expectations and changes in the consequences for inappropriate behavior. This is the hypothesis: If expectations are clarified, explained in more detail, and made more visible, students will be more likely to conform to classroom rules and routines.

Step 3: Implement the Plan With Fidelity

- In the classroom, the teacher focused on expectations and consequences. Communication of expectations was improved by discussing and posting expectations for social behavior and by implementing individual and group consequences for improved classroom behavior.
- In addition, the teacher established increased structure for the beginning of the class period by putting a story-starter statement on the board and requiring students to write at least 150 words concerning their experiences. Numbers of words and correct word sequences were recorded and graphed daily. Students were prompted to begin their essays immediately when entering the classroom.
- Consequences were changed as well—the primary method of overcoming performance problems. The classwide contingency was 10 minutes of free time at the end of each class period and a one-day-per-week homework holiday if classwide behavior change goals were met and individual homework was completed successfully. Individual consequences for disruptive behaviors included loss of homework holiday privileges and additional work while other students had free time.

Step 4: Assess Progress Frequently and Evaluate Results

- The only way to know whether these strategies would work with adolescents was to implement the interventions and monitor progress.
- Data collection during the first 10 minutes of the class and the monitoring of transitions was continued. Data were entered on the graph each day and examined weekly. The intervention plan specified changes if weekly improvement goals were not attained.
- A checklist was established detailing what the teacher was to do each class period to implement the intervention. The teacher reviewed the checklist each day and checked the steps that were completed as a means to ensure a high level of treatment integrity.
- Results were reviewed after one week (see Figure 4 on page 9). The plan was successful for all but one student, who continued a high rate of disruptive behavior even though peer and teacher attention for the behavior was significantly reduced. The teacher worked with the counselor and parent to establish a home-school note intervention for this student that defined appropriate behaviors. A form was developed that the teacher checked and reported to the parent through an e-mail. The parent administered consequences at home—more or less computer, phone, and television access, depending on whether daily behavior goals were met.
- During the second week, subsequent to implementing the plan for the one highly disruptive student, the overall goal was met. The intervention continued through the course of the year with occasional slight changes to maintain motivation and participation.

Comments on Classroom Problem Solving

An obvious question is whether the teacher has time to engage in problem solving and implementation of the interventions. The answer becomes clear if one considers the amount of instructional time lost because of disruptive behavior in the classroom. Interventions of this nature typically increase instructional time and student engagement, so the time commitment is worthwhile for the teacher and enhances student achievement. It is important to note that in the illustrative application, data collection was simplified and applied only during the first 10 minutes of the class period. Moreover, it was informal and required simply entering tick marks on a card while engaging in normal teaching activities. More intense data collection and problem solving with the involvement of related-services personnel would follow *if* this level of problem solving were insufficient to significantly reduce the disruptive behaviors. Much could be improved about this intervention, but the goal is not a perfect intervention with all the features of a good single-subject behavioral design. Rather, the goal is to implement only what is needed to achieve an efficient classroom that maximizes engaged time and learning opportunities.

RTI at the School Level: Improving Achievement in Algebra

The second example of RTI in a secondary education setting involves multiple teachers and intervention tiers of increasing intensity. The goal was to improve student achievement outcomes in Grade 9 algebra. Research on high school completion indicates that passing Grade 9 algebra and English classes puts students on a positive trajectory, and not passing is significantly correlated with dropping out (Christenson, Reschly, et al., 2008; Jimerson, Reschly, & Hess, 2008). In this example, RTI principles were applied to the goal of improving both the levels of achievement and the passing rates in the Grade 9 algebra classes of three high school mathematics teachers.

Tier I: General Education—Prevention

Current status (baseline) data on algebra achievement and passing rates were based on records during the prior five years, which included nine-week and semester passing rates (grade of C or better), performance on the state's high-stakes test in mathematics (percentage at the proficient level), and scores on the common nine-week examinations used by all teachers. Each outcome was represented on a graph (data not shown). In Figure 5, mathematical proficiency goals and progress on the Minnesota high-stakes tests are represented. The goal was to increase the proportion of students meeting proficiency standards by 5 percentage points per year until the overall goal of greater than 90 percent proficiency was reached.

The next step was to examine the curriculum, ensure alignment with state standards, and review current textbook and instructional technology resources. The algebra curriculum was organized into the broad competencies suggested by the National Mathematics Advisory Panel (2008), which were parallel to the state standards. Teachers collaborated in identifying supplemental instructional resources for each of the broad competencies to ensure multiple presentation modes. Explicit instructional routines were identified and designed for students with lower levels of relevant, prerequisite knowledge.

All Grade 8 students' prerequisite knowledge was assessed at the beginning of the school year. Students with high levels of prerequisite knowledge were placed in algebra classes, and those with moderate or low levels of knowledge enrolled in classes that focused on the critical prerequisite skills to success in algebra.

The district's data management system was used to track individual student and classwide levels of algebra achievement. Teachers entered information daily, reflecting class attendance and homework completion and accuracy. Results of weekly quizzes were recorded as well. Students with marginal attendance rates and poor homework completion and accuracy rates were identified weekly. Parents

and students were encouraged to access individual student data so that student performance records would be immediately available to concerned parties. Supplemental, explicit instruction on key algebra competencies was placed online, so it would be accessible at school and at home. The data management system was programmed to produce weekly profiles of each student's achievement and attendance. Interventions were implemented immediately when attendance goals and achievement indicators fell below goals. A considerable amount of research supports close monitoring and early interventions as procedures that improve achievement and school completion (National Mathematics Advisory Panel, 2008).

Tier I goals were defined, including 95 percent homework completion at an accuracy rate of ≥ 85 percent and a weekly quiz-passing rate of 95 percent. Similar goals were established for unit tests (95 percent passing), nine-week grades, and semester grades (95 percent at C or above). Overall progress was assessed through comparisons with the five-year baseline data on unit, semester, and end-of-course examinations.

The teachers met every week initially—changed after one semester to every other week—to discuss success and failure across the classes in the context of specific domains of algebra achievement. The guidelines for the meetings were idea sharing, mutual support, and a focus on what could be done to improve individual and group achievement. Celebrations were held when individual and class goals were met. A "no-blame" culture was established that prohibited blaming teachers for poor instruction or blaming students by citing hypothetical internal student attributes, such as low ability. Class and individual graphs reflecting results were the starting point for discussions of curriculum, instruction, and student engagement. Special education coteachers and the mathematics curriculum specialist participated in the meetings. The principal attended many of the meetings, as schedules and other responsibilities permitted.

Figure 4. Disruptive Events: Individual Plan Added to Classwide Plan

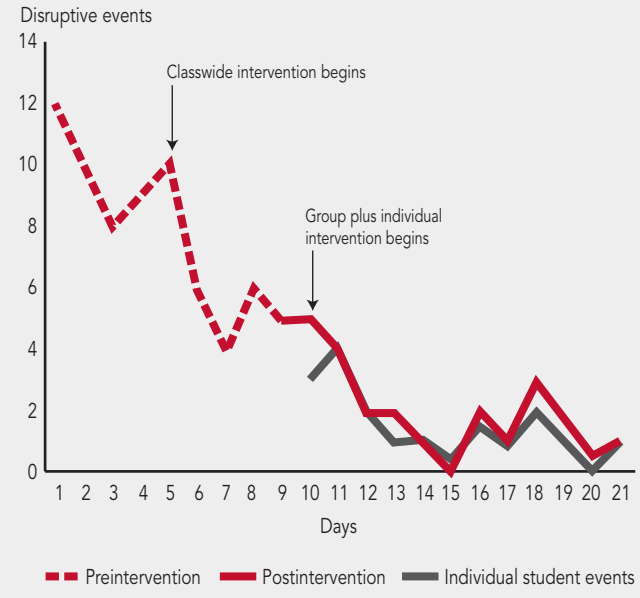
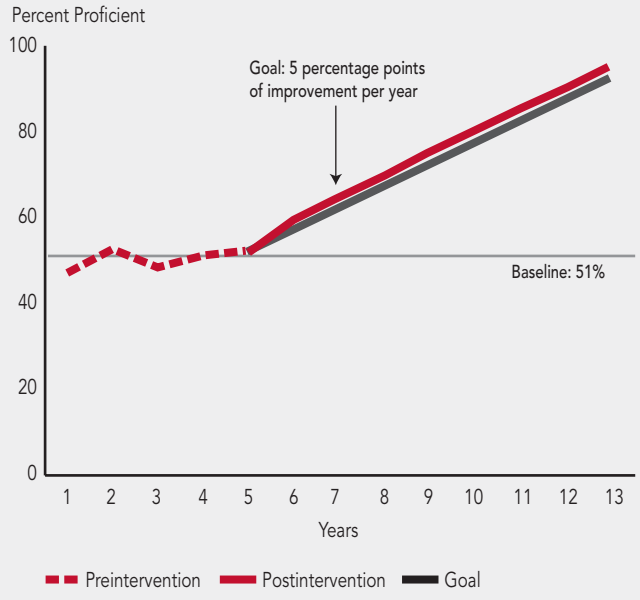


Figure 5. Mathematics Proficiency Goal and Progress



A special education teacher participated in each of the algebra classes and shared responsibilities for instruction. The inclusion model implemented involved coteaching as well as small-group work with students who needed additional, more direct and systematic instruction. Students struggling with algebra concepts and principles participated in these small groups, which included both special and general education students. The special education teacher also implemented many of the instructional and assessment accommodations specified in students' Section 504 individualized education programs (IEPs).

Positive results were obtained at Tier I. Class attendance and homework goals were met, and increasing proportions of students passed weekly, unit, nine-week, and semester tests. Overall test performance increased, compared with the baseline data from the preceding five years. The goal was to improve the percentage of students reaching the proficient level in mathematics by 5 percent per year until 90 percent of students were proficient. During the next three years, the proportion of students reaching proficiency on the state mathematics assessment increased from 52 percent to 67 percent. The goal of 90 percent was not yet attained, but substantial progress toward that goal had been achieved. The proportion of students receiving algebra grades of C or higher increased from 65 percent to 95 percent, consistent with the higher performance of students on common tests across classes and state standards-based assessments.

From semester to semester and year to year, the mathematics teachers worked together to improve instructional options for students to acquire essential competencies, and they changed incentives for performance as needed to prompt high levels of student engagement. When progress-monitoring results were short of goals, changes were made. Typically, changes were made in the variety of instructional activities, instructional illustrations, and enhanced incentives for student engagement. Throughout this program and continuing into the future, the motto for all was "Try it. Measure results. Change if goals are not attained. Celebrate when we meet goals." Teachers posted graphs showing performance in their classrooms. Meeting and exceeding increasingly challenging goals were celebrated by students, teachers, and parents at school events; by local news programs; and with community social service organizations. Algebra achievement not only was expected but also was supported in numerous ways by the entire school community.

Did these interventions work equally well for all students? Not likely. The answer is in the data collected on classroom and individual student performance. In fact, about 10 percent of the students, depending on the class and the subdomain of algebra achievement, did not meet goals consistently, so Tier II interventions were provided for them.

Tier II: Early Identification and Treatment

For those students who were falling behind in achieving algebra achievement goals, more intense instructional interventions were established. A special education coteacher carried out small-group classroom tutoring; in the typical classroom, this instruction included one or two students with disabilities and three or four low-achieving students not eligible for special education. The small-group tutoring followed explicit and systematic instructional procedures, with weekly progress monitoring using algebra curriculum-based measures (see Foegen, 2008; Foegen, Olson, & Impecoven-Lind, 2008; Iowa State University, 2004). Individual graphs were established and progress was monitored against goals for each of the students in Tier II. Three of the five students met benchmark expectations with the additional instructional assistance. Two special education students did not meet expectations, despite more intensive instruction and more frequent and precise measurement.

Tier III: Long-Term and Intense Individualized Instruction

In the current year, two students across the three classes did not reach benchmark levels of performance with the Tier II small-group, more intense instruction; therefore, Tier III instructional interventions were established. Both students were previously identified as having a disability consistent with guidelines in federal and state legislation. In addition to continuing the instruction at Tiers I and II as part of inclusion of students with disabilities in general education classrooms to the maximum extent feasible—ensuring exposure and opportunities to learn general education curriculum content—the intervention provided these students with individual tutoring in algebra for an additional 30 minutes per day, which was continued for one semester.

Progress continued to be extremely low for one student, who was falling well short of basic levels of algebra achievement—despite numerous instructional changes and increasing degrees of instructional explicitness. For this student, after nearly one year of sustained slow progress in mathematics, despite intense interventions, a new IEP was developed, with the full participation of the parents as members of the multidisciplinary team. The team agreed to establish alternative goals in mathematics that were less complex and challenging than the state standards and to use alternative assessment procedures for accountability purposes.

The second student in Tier III attained the basic level of algebra achievement specified in the state standards and earned a semester grade of C. This student continued in the general education mathematics curriculum.

During the past year, over the three classes involving 85 students, only one student did not respond adequately to the tiered interventions. For that student, identified as a student with a disability, a change in the IEP was implemented and alternative mathematics objectives and assessments were established. All other students attained at least a "basic" level of competence on the state's high-stakes test and semester grades of C. Compared with the prior five years, these results represented significant improvements.

Comments on School-Level RTI

All steps in the RTI process were followed in the example, involving efforts to improve algebra achievement and course-passing levels, both of which are significantly related to improved high school completion levels. Scientifically based instructional principles were applied. Early screening was implemented, with weekly progress checks accomplished through the normal data management system adopted by the school. Progress against goals was assessed frequently, and changes in either goals or intervention intensity were implemented based on comparing results to goals. Interventions of increasing intensity were implemented with students who did not attain achievement goals with the general education curriculum and instruction. The improvements were accomplished within the current school resources.

RTI at the System Level

System-level RTI implementation involves multiple educational subsystems and broad, long-term goals. Attainment of the goals requires interventions in several domains, across multiple years, by many different persons. One example is improved high school completion rates.

The current provisions of ESEA established the goal of markedly improved high school completion rates. The ESEA goal is 100 percent completion of high school, a worthy goal that will require enormous changes and improvement of current outcomes. Although 100 percent completion may be unrealistic in the short term, it is reasonable to expect and hold accountable state education agencies (SEAs) and local education agencies (LEAs) for improving completion rates toward

an ultimate goal. In fact, all SEAs and nearly all LEAs have considerable room for improvement. IDEA (2004) established requirements concerning improving high school completion rates for students with disabilities. SEAs and LEAs can be sanctioned for failure to improve completion rates, which establishes high stakes for both individual students and education systems regarding high school completion. RTI focuses on improving results.

The next example discusses a school district that used RTI strategies and procedures to organize and implement interventions designed to improve high school completion rates.

The Problem

The district was cited by its SEA for low and stable high school completion rates. Completion rates varied significantly by race/ethnicity, poverty status, language background, and disability status. Some groups were near SEA expectations, but others were well below state goals. Continued substandard high school completion rates were almost certain to lead to sanctions on the district. What could be done?

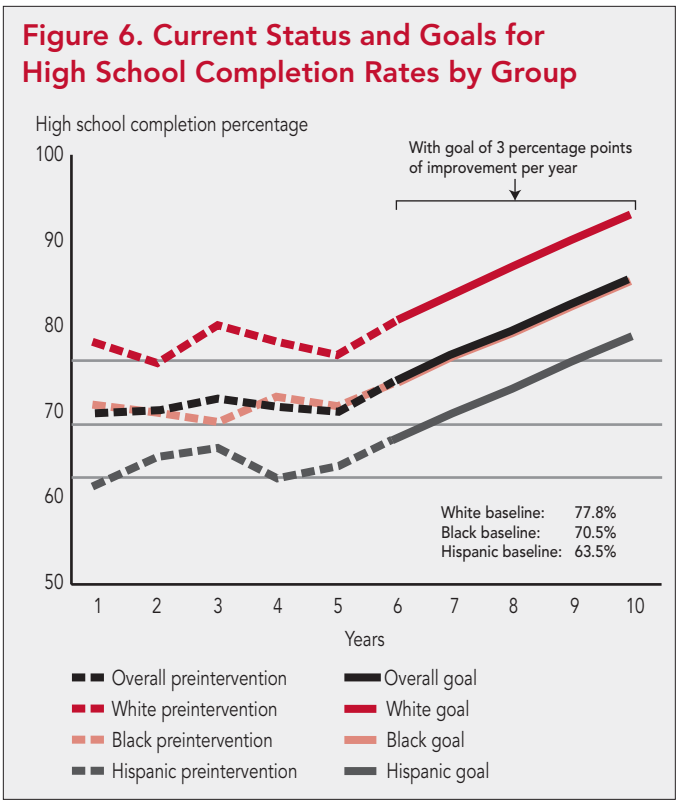
The board of education, administrators, and teachers committed to improving completion rates through interventions. A task force was appointed involving educators, parents, and community leaders. Research on high school dropout and completion rates was reviewed as the first step in the development of a plan to improve completion rates. The plan included steps to improve the process of early identification and treatment in earlier grades. At the secondary level, the RTI process was established to guide and monitor the interventions. The previously described principles of RTI were incorporated rigorously into the process, using a three-tier model.

Tier I Prevention: Problem Solving

Tier I problem solving focused on defining the problem, establishing accurate data that portrayed the current status, and establishing a challenging but achievable goal to close the gap between current and desired levels of high school completion. A graph was developed to reflect current status. An annual goal of increasing high school completion by 3 percent per year was established. Additional goals were established for white, African-American, and Hispanic students (see Figure 6).

The second step was to analyze the conditions related to noncompletion of high school, review evidence-based interventions, and establish an intervention plan designed to improve the likelihood of high school completion for all students. The task force quickly found that no easy or immediate fixes exist for high school completion. Dropping out of high school is not so much an event as a long-term process of declining school participation and engagement (Reschly & Christenson, 2006). Therefore, the Tier I interventions included elementary and middle schools.

Figure 6. Current Status and Goals for High School Completion Rates by Group



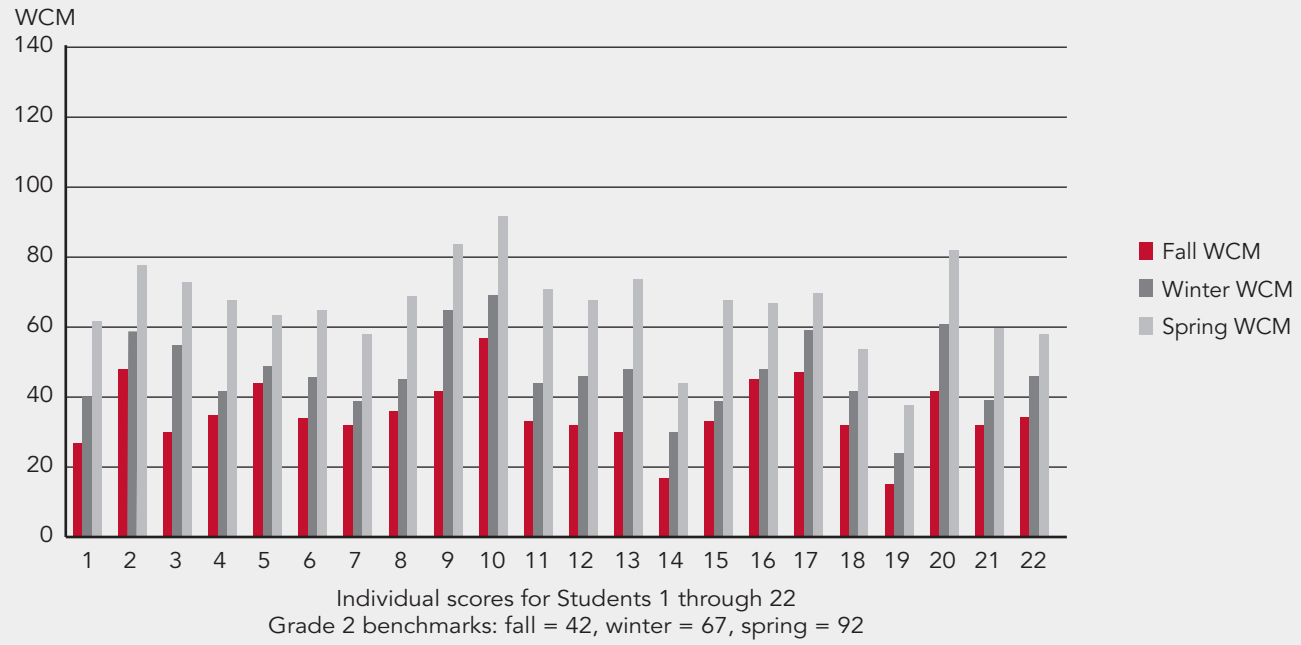
The task force identified several correlates of high school noncompletion as well as a number of general education interventions that improve the likelihood of high school completion. Several of these correlates involved improving academic success; enhancing engagement; improving a sense of belonging or identification in school; and providing early identification of warning signs, such as declining attendance. Data were gathered on several of these variables through engagement surveys; attendance analysis; course grades; course completion; and indicators of involvement, such as participation in school activities. Goals were established for improvements in each of these areas. Finally, an individualized school completion plan was established for each middle school student, with parent participation encouraged, denoting key milestones and expected progress. Computer-generated reports of progress toward high school completion were provided to parents and students at the end of each semester.

Student engagement measures were applied beginning in middle school (a strategy endorsed by Appleton, Christenson, Kim, & Reschly, 2006). The results of these measures were included in the individualized school completion report. Low levels of student engagement were identified as an important indicator of likely nonschool completion and formed the basis for individual and family interventions.

Tier I intervention selection depends on the data patterns in a specific LEA. Existing data in the illustrative district indicated the need to establish the following additional interventions (neither an exhaustive list nor applicable to every LEA):

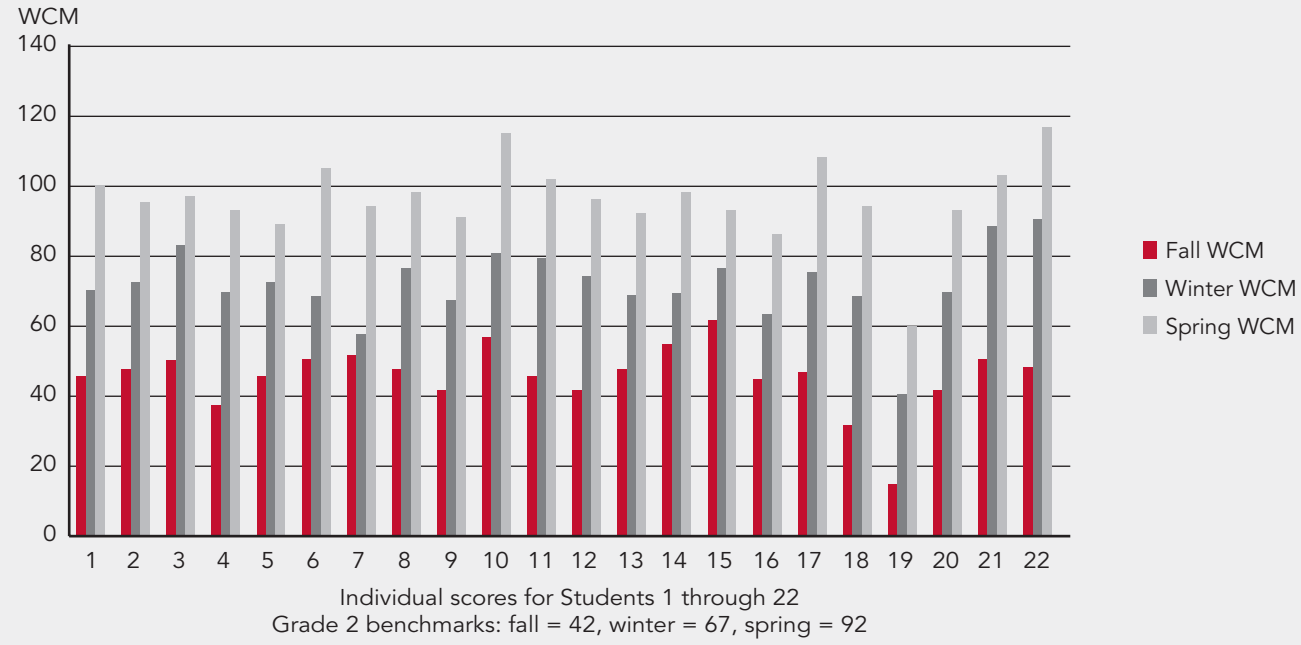
- Attendance was monitored and analyzed beginning in the elementary grades. The interventions that were implemented involved parents and students, including letters to homes, graphs of attendance with goals for improvement, and high school volunteers who met individually with elementary and middle school students having poor attendance. Progress was monitored against goals weekly, and changes were made when goals were not attained.
- Intensive general education reading and mathematics programs were established in the elementary grades based on the data indicating the strong relationship between poor academic skills and dropping out of high school. Goals were established regarding improvements in reading and mathematics. A goal of 85 percent of students meeting basic competence levels was established for both classrooms and schools. Universal screening three times per year with appropriate progress-monitoring measures was established in reading, mathematics, and writing skills for Grades K–6. Students below established competence levels received additional instruction and monitoring in general education classrooms.
- Reading and mathematics curricula were revised to incorporate evidence-based practices consistent with national panel findings (National Mathematics Advisory Panel, 2008; National Reading Panel, 2000; Snow, Burns, & Griffin, 1998). Progress of all students was monitored three times per year with reading and mathematics curriculum-based measures. Reading results for Grade 2 students are shown in Figures 7 and 8.
- As shown in Figure 7 (page 14), many students in Classroom A were below benchmarks and the class was not meeting the goal of 85 percent at or above benchmarks. Most were not at benchmarks when they began Grade 2, and most continued below benchmarks. These results indicated that changes were needed in content of reading instruction and/or instructional strategies in prior grades and in Grade 2. In Figure 8, results for Classroom B indicate that more than 85 percent of students were at benchmarks in fall, winter, and spring. Current reading content and instructional strategies were working well in this classroom. For students with persistent achievement deficits in classrooms that were reaching benchmarks (e.g., see Student 19 in Figure 8), more intensive small-group and individual interventions were established at Tier II. It cannot be overemphasized that when classwide goals are not achieved, changes in curriculum content and/or instructional strategies are necessary.

Figure 7. Classroom A Reading Scores: Words Correct per Minute (WCM) for Grade 2 Students



Individual scores for Students 1 through 22
Grade 2 benchmarks: fall = 42, winter = 67, spring = 92

Figure 8. Classroom B Reading Scores: Words Correct per Minute (WCM) for Grade 2 Students

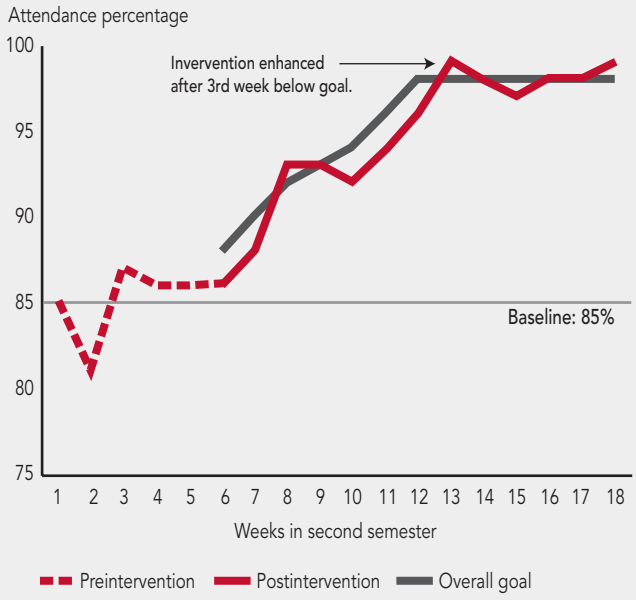


Individual scores for Students 1 through 22
Grade 2 benchmarks: fall = 42, winter = 67, spring = 92

- The district revised its policies regarding grade retention of students in light of the well-established relationship between retention and dropping out of high school (Hong & Yu, 2007; Jimerson, 2001). Alternatives to retention were examined and implemented, and a policy of reducing retention was established, including a prohibition against retaining any student for more than one year.
- Encouragement for participation in school activities in middle and high school was increased, and a profile for each student was established electronically and monitored monthly. Teachers and counselors encouraged students with little or no participation to choose one or more activities that matched their interests.
- The district was organized by grade levels: elementary, Grades K–5; middle school, Grades 6–8; and high school, Grades 9–12. Successful transition from middle to high school was a critical developmental challenge that appeared to be related to high school completion. Important Grade 9 indicators such as passing grades in courses, consistent attendance, and engagement with school were identified and used to develop interventions. Successful transition was determined to involve social, emotional, and academic components. Improved transition required greater support to students as well as closer monitoring of classroom performance.
- To improve the transition from middle to high school, the LEA implemented the following interventions: (1) formal transition services were provided at the beginning of Grade 9 with periodic updates, (2) social-skills education and problem solving were established in Grade 9 homerooms to deal with issues such as social isolation, bullying, and sense of efficacy; (3) close monitoring of academic performance on a weekly basis, using the district's data-management system, was implemented to detect early indications of academic failure, followed by immediate academic interventions for students falling behind. Class participation, homework completion and accuracy, test performance, and teacher ratings were monitored weekly. Particular attention was devoted to algebra and English, key courses that set the stage for completion or noncompletion of high school. Graphs were developed to track attendance and academic performance in Grade 9 English and algebra classes—and to intervene as indicated.

Attendance was monitored and interventions implemented when attendance fell below goals (see Figure 9). Increased student engagement and faculty involvement were based on interviews with students who had dropped out in recent years. Many former students indicated that they had not planned to drop out but started to miss more days of school and no one seemed to notice or care, so they finally just stopped going to school. The district was committed to noticing, showing care, and encouraging participation.

Figure 9. Attendance Monitoring and Intervention



Tier II Interventions

For each of the Tier I interventions described, more intense Tier II services were established, which involved more intense academic instruction at all school levels for students struggling with acquiring essential skills, including individual and small-group interventions at the middle and high school levels, as follows:

- Students at any grade level with poor or declining attendance (absence rates of more than 5 percent) were identified for more intensive interventions, such as individual student meetings to discuss their reasons for not attending school (e.g., motivation, difficulty with schoolwork, home situations, safety concerns), phone conversations with parents and invitations to parents to attend school events, incentives for teachers to improve attendance (e.g., public recognition, subject-domain contests, a day or week without extra duties), and continued monitoring. Individual graphs with improvement goals and progress plotted against goals were established for all students missing more than 5 percent of school days.
- More intensive Tier II academic services were established for students not responding adequately to general classroom instruction in core academic areas. The Tier II academic program was intended to serve perhaps 12 percent to 15 percent of students at any given time. Tier II services were time limited, typically 15 to 20 weeks. The goal was to improve skill levels and learning rates so that students could continue in full-time general education classrooms. Students not improving their level and rate of progress were then considered for more intense, longer term services (more than one year in duration). Tier II academic services were delivered to groups of three to five students by personnel with additional expertise in more intense academic instruction in specific domains such as reading and mathematics.

Tier III Interventions

More intense Tier III interventions were developed for students not responding sufficiently to Tier I and II interventions. Tier III interventions may or may not involve special education. Intervention intensity and measurement precision were increased in Tier III, and the programs varied in funding sources and educational content. For example, a high school student with significant difficulties internalizing emotional regulation (i.e., serious depression) received intensive Tier III services through a community mental health program along with instructional accommodations in classes. The instructional accommodations, coordinated closely with the mental health treatment, involved individual tutoring when appropriate, additional time to meet course objectives, and multiple opportunities to access instructional content. In the case of significant mental health problems, Tier III interventions may be needed for a few weeks or as much as several years.

The Check & Connect program (Christenson, Thurlow, et al., 2008; Reschly & Christenson, 2006) was implemented as a Tier III intervention for students who continued with low school engagement and chronic attendance problems despite interventions at prior tiers. Check & Connect is an evidence-based program that uses more individualized, one-to-one relationships with students to foster increased school engagement, attendance, and high school completion. It is a relatively expensive program that reliably produces significant improvements in high school completion (see What Works Clearinghouse, 2006).

Special education eligibility was considered for some students with chronic achievement and/or behavior problems who did not respond adequately to increasingly intense interventions in Tiers I and II. Nearly all of these students were placed in inclusive special education programs, meaning that services were brought to them in general education

classrooms by special education personnel. The inclusion in general education classrooms was frequently supplemented by brief, daily pull-out sessions to focus on development of specific skills.

Two additional goals were set for the special education interventions. The first goal was to reduce overall identification of special education students to current state levels, including reducing minority disproportionality. The second goal was to increase the number of students who reach goals and are phased out of special education. Data on these goals were monitored and graphed monthly. Individual student progress in the context of the general education curriculum was assessed weekly, and reports were sent to parents.

Comments on System-Level RTI

The system-level interventions established through RTI processes incorporate the key principles described in this brief, but with one important additional feature: The principles are applied at multiple school levels to several goals, all of which are related to improving the overall outcome. Few important overall educational outcomes can be changed significantly without multiple interventions. The example in this brief only scratches the surface of the problem-solving analyses required to apply RTI at multiple levels involving many subgoals related to an overall outcome. Just a few of the relevant graphs were included. The purpose was to illustrate RTI at the system level as a means to guide multiple interventions related to meaningful components of an overall educational outcome.

Educator Preparation for Response to Intervention

Preparing educators to implement the critical components of RTI is crucial to its success. Key domains of preparation are described in the innovation configuration (Roy & Hord, 2004) in the Appendix (see page 22). Descriptions of key competencies vary with the nature of the educational professionals who serve in different roles in RTI design and implementation (Batsche et al., 2005). Teacher preparation and continuing professional development are emphasized in this brief.

Critical Teacher Competencies in RTI Implementation

Teachers are vital participants in the vast majority of RTI-based interventions. Teacher competencies essential to RTI implementation are described in this section. These competencies vary from attitudes and beliefs to specific skills.

Attitudes and Beliefs. Attitudes toward student capabilities to learn and beliefs about the efficacy of teachers in implementing instruction that produces improved achievement for all students are fundamental to successful teacher participation in RTI. Teachers lacking a sense of efficacy or willingness to address the needs of all learners are unlikely to implement the varied interventions needed by learners with a broad range of prior achievement in specific domains.

Instructional Competencies. Instructional competencies are critical to effective teacher contributions to RTI processes. Teachers must have domain-specific knowledge (e.g., deep knowledge of the subject being taught) and facility with a range of instructional strategies. Teachers must be able to provide instruction that matches the prior level of learner knowledge, including explicit, systematic instructional procedures for students with lower

levels of prior knowledge in a specific domain (National Mathematics Advisory Panel, 2008; Schumaker, 2008; Smartt & Reschly, 2007). Teachers must match explicitness of instruction to learner levels of achievement and use learning strategies to facilitate efficient learning.

Classroom Organization and Behavior Management. Competencies in classroom organization and behavior management appropriate to the level of students being taught are crucial to establishing effective learning environments and high levels of student engagement (see Oliver & Reschly, 2007).

Problem-Solving Skills. The problem-solving skills described in previous sections of this brief are required of all participants in RTI procedures including teachers. Essential competencies are as follows:

- Defining classroom achievement and behavior problems in objective, observable language, focusing when possible on behaviors to increase rather than simply reducing behaviors.
- Developing and implementing data collection procedures that are adequate for determining current status and reflecting change. Data collection measures are selected that do not interfere excessively with ongoing instructional procedures; when possible, naturally occurring student records are used.
- Determining current status through collection of data, comparing current to appropriate levels of performance, establishing challenging but achievable goals, and establishing graphs or other visual representations as a means to monitor progress.
- Analyzing gaps between current and desired levels of behavior as *skill* problems (student cannot do or does not know) or *performance* problems (student can do but does not do) and developing age-appropriate interventions depending on the nature of the problem(s). Skill problems require instruction in order for the student(s) to learn knowledge or acquire skills. Performance problems require clarification of expectations coupled with enhanced incentives and response cost to close gaps between current and expected levels of behavior (Sulzer-Azaroff & Mayer, 1991; VanDerHeyden & Witt, 2008).
- Determining an intervention plan, focusing on classroom conditions that are alterable on the basis of evidence-based instructional design and behavior-change principles.
- Implementing the plan as designed, continuing to collect data, maintaining a graph to monitor progress, and changing intervention plans that prove to be unfeasible or ineffective.
- Evaluating the success of intervention plans, making decisions about continuation of plans, and determining whether other behaviors should be considered for interventions.

Domain-, School-, and System-Level Effects. Teachers work with colleagues and specialized personnel to implement RTI in specific subject domains (e.g., improved reading skills for struggling students through reading instruction at all school levels), at specific school levels (e.g., improved middle school social behaviors), and at system levels (e.g., improved high school completion). They implement interventions sometimes designed by others, collecting data, changing current academic and behavioral instruction as necessary, contributing to data-based decision making, and implementing evidence-based practices with fidelity.

Who Does What?

Who does what in an RTI system? There is no universal answer other than to emphasize that different roles in RTI are assumed by different categories of professionals, depending on local decisions. Many different variations exist in effective RTI systems. The best way to answer these questions is through district and school planning. Planning guides have been developed to identify key issues and allocation strategies (see Elliott & Morrison, 2008; Kurns & Tilly, 2008).

Summary

Teacher preparation in RTI principles through preservice and professional development programs is essential to the successful application of RTI for improving results. This brief has described and illustrated RTI concepts and principles at the secondary level and specified critical teacher competencies. RTI uses problem-solving principles involving defining problems objectively, determining current status with data, specifying gaps between current and desired levels of performance, analyzing conditions and formulating interventions designed to reduce gaps and improve performance, implementing interventions with progress monitoring, and—most important—changing interventions that are not working. RTI and problem solving are intended to establish a self-correcting process. If an intervention is not working, it is changed using decision rules. These procedures have enormous promise for improving results in educational settings, including middle and high schools.

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Appendix

Response to Intervention Innovation Configuration: Teacher Competencies

Teacher Competency	Code = 0	Code = 1	Code = 2	Code = 3	Code = 4	Rating
Instructions: *Place an X under the appropriate variation implementation score for each course syllabus that meets each criterion specified from 0 to 4. Score and rate each item separately.* *Descriptors and/or examples are bulleted below each of the components.*	**No evidence** that the concept is included in the class syllabus	Concept **mentioned** in class syllabus	Concept mentioned in class syllabus, **with required readings, tests, and/or quizzes**	Concept mentioned in class syllabus, with readings, tests, **and assigned projects for application** • Observations • Lesson plans • Classroom demonstrations • Journal response	Previous requirements **and teaching application with feedback** • Fieldwork (practicum) • Tutoring	*Rate each item as the number of the highest variation receiving an X under it.*
Attitudes and Beliefs • Sense of efficacy • Willingness to differentiate instruction to meet learner differences • Commitment to improving achievement with all students • Knowledge of multiple sources (online and print) for classroom interventions • Collaboration with other educators to improve school outcomes						
Instructional Competencies • Deep subject knowledge • Mastery of a range of instructional techniques • Capabilities with multiple ways of presenting content • Capabilities to match explicitness of instruction to learner prior knowledge • Application of leaning strategies to enhance content mastery (Schumaker, 2008)						
Column Subtotals:						

Teacher Competency	Code = 0	Code = 1	Code = 2	Code = 3	Code = 4	Rating
Instructions: *Place an X under the appropriate variation implementation score for each course syllabus that meets each criterion specified from 0 to 4. Score and rate each item separately.* *Descriptors and/or examples are bulleted below each of the components.*	**No evidence** that the concept is included in the class syllabus	Concept **mentioned** in class syllabus	Concept mentioned in class syllabus, **with required readings, tests, and/or quizzes**	Concept mentioned in class syllabus, with readings, tests, **and assigned projects for application** • Observations • Lesson plans • Classroom demonstrations • Journal response	Previous requirements **and teaching application with feedback** • Fieldwork (practicum) • Tutoring	*Rate each item as the number of the highest variation receiving an X under it.*
Classroom Organization and Behavior Management • Implementation of effective classroom organization and behavior management (Oliver & Reschly, 2007) • Implementation of proactive methods to foster student cooperation and engagement with learning • Use of positive approaches to teach and reward appropriate student behavior and correct behavior infractions						
Column Subtotals:						

Teacher Competency	Code = 0	Code = 1	Code = 2	Code = 3	Code = 4	Rating
Instructions: *Place an X under the appropriate variation implementation score for each course syllabus that meets each criterion specified from 0 to 4. Score and rate each item separately.* *Descriptors and/or examples are bulleted below each of the components.*	**No evidence** that the concept is included in the class syllabus	Concept **mentioned** in class syllabus	Concept mentioned in class syllabus, **with required readings, tests, and/or quizzes**	Concept mentioned in class syllabus, with readings, tests, **and assigned projects for application** • Observations • Lesson plans • Classroom demonstrations • Journal response	Previous requirements **and teaching application with feedback** • Fieldwork (practicum) • Tutoring	*Rate each item as the number of the highest variation receiving an X under it.*
Problem-Solving Competencies • Definition of concerns in observable language • Definition of positive goals as well as goals involving reduction of behaviors • Development and implementation of data-collection measures that reflect behavioral goals • Examination of current status data and identification of gaps between current and desired performance • Development of challenging, achievable goals • Analysis of problem behaviors as skill problems or performance problems • Analysis of problem behaviors in terms of alterable conditions in the setting • Development of intervention plans that use evidence-based principles • Implementation of interventions with good fidelity • Implementation of progress monitoring with graphs and revisions of interventions as needed • Evaluation of results using graphs comparing results with goals • Decisions about whether to continue, discontinue, fade, or revise intervention(s)						
Column Subtotals:						

Teacher Competency	Code = 0	Code = 1	Code = 2	Code = 3	Code = 4	Rating
Instructions: *Place an X under the appropriate variation implementation score for each course syllabus that meets each criterion specified from 0 to 4. Score and rate each item separately.* *Descriptors and/or examples are bulleted below each of the components.*	**No evidence** that the concept is included in the class syllabus	Concept **mentioned** in class syllabus	Concept mentioned in class syllabus, **with required readings, tests, and/or quizzes**	Concept mentioned in class syllabus, with readings, tests, **and assigned projects for application** • Observations • Lesson plans • Classroom demonstrations • Journal response	Previous requirements **and teaching application with feedback** • Fieldwork (practicum) • Tutoring	*Rate each item as the number of the highest variation receiving an X under it.*
Participate in Classroom, School, and System RTI • Collaboration with colleagues and administrators to design interventions • Implementation of interventions with good treatment integrity • Implementation of progress-monitoring procedures • Participation in revising interventions and evaluating effects						
Column Subtotals:						
Column Totals:						

About the National Comprehensive Center for Teacher Quality

The National Comprehensive Center for Teacher Quality (TQ Center) was created to serve as the national resource to which the regional comprehensive centers, states, and other education stakeholders turn for strengthening the quality of teaching—especially in high-poverty, low-performing, and hard-to-staff schools—and for finding guidance in addressing specific needs, thereby ensuring that highly qualified teachers are serving students with special needs.

The TQ Center is funded by the U.S. Department of Education and is a collaborative effort of ETS, Learning Point Associates, and Vanderbilt University. Integral to the TQ Center's charge is the provision of timely and relevant resources to build the capacity of regional comprehensive centers and states to effectively implement state policy and practice by ensuring that all teachers meet the federal teacher requirements of the current provisions of the Elementary and Secondary Education Act (ESEA), as reauthorized by the No Child Left Behind (NCLB) Act.

The TQ Center is part of the U.S. Department of Education's Comprehensive Centers program, which includes 16 regional comprehensive centers that provide technical assistance to states within a specified boundary and five content centers that provide expert assistance to benefit states and districts nationwide on key issues related to current provisions of ESEA.

Acknowledgments

The authors gratefully acknowledge the valuable feedback provided by Tricia Coulter, Ph.D., Learning Point Associates; Greg Roberts, Ph.D., Center on Instruction, RMC Research Corporation; Diane Morrison, Ed.D., Loyola University–Chicago; Bonnie D. Jones, Ed.D., Office of Special Education Programs, U.S. Department of Education; Amy L. Reschly, Ph.D., University of Georgia; and Lynn R. Holdheide, Vanderbilt University.

Special thanks go to Sabrina Laine, Ph.D., and Jane Coggshall, Ph.D., of Learning Point Associates for their insightful guidance and support throughout all stages of the development of this brief.

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The National Comprehensive Center for Teacher Quality is a collaborative effort of ETS, Learning Point Associates, and Vanderbilt University.

3907_09/09