School Instructional Time: The Irreplaceable Resource

"In the average school system, there are 330 minutes in the instructional day, 1,650 minutes in the instructional week, and 56,700 minutes in the instructional year. Except in unusual circumstances, these are the only minutes we have to provide effective services for students. The number of years we have to apply these minutes is fixed. Therefore, each minute counts and schools cannot afford to support inefficient models of service delivery." p. 177


Academic or Behavioral Targets Are Stated as ‘Replacement Behaviors’

"The implementation of successful interventions begins with accurate problem identification. Traditionally, the student problem was stated as a broad, general concern (e.g., impulsive, aggressive, reading below grade level) that a teacher identified. In a competency-based approach, however, the problem identification is stated in terms of the desired replacement behaviors that will increase the student’s probability of successful adaptation to the task demands of the academic setting." p. 178


Before Implementing Tiered Interventions, First Define Student Needs

“Student difficulty is regarded as the result of a mismatch between student need and the resources that have been provided.” Burns & Gibbons, 2008; p. 95

“Problems are an unacceptable discrepancy between what is expected and what is observed…A problem solution is defined as one or more changes to the instruction, curriculum, or environment that function(s) to reduce or eliminate a problem.” T. Christ (2008); p. 159


Interventions. An academic intervention is a strategy used to teach a new skill, build fluency in a skill, or encourage a child to apply an existing skill to new situations or settings.

An intervention is said to be research-based when it has been demonstrated to be effective in one or more articles published in peer-reviewed scientific journals. Interventions might be based on commercial programs such as Read Naturally. The school may also develop and implement an intervention that is based on guidelines provided in research articles—such as Paired Reading (Topping, 1987).

Accommodations. An accommodation is intended to help the student to fully access the general-education curriculum without changing the instructional content. An accommodation for students who are slow readers, for example, may include having them supplement their silent reading of a novel by listening to the book on tape.

An accommodation is intended to remove barriers to learning while still expecting that students will master the same instructional content as their typical peers. Informal accommodations may be used at the classroom level or be incorporated into a more intensive, individualized intervention plan.

Modifications. A modification changes the expectations of what a student is expected to know or do—typically by lowering the academic expectations against which the student is to be evaluated.

Examples of modifications are reducing the number of multiple-choice items in a test from five to four or shortening a spelling list. Under RTI, modifications are generally not included in a student’s intervention plan, because the working assumption is that the student can be successful in the curriculum with appropriate interventions and accommodations alone.

Increasing the Intensity of an Intervention: Key Dimensions

Interventions can move up the RTI Tiers through being intensified across several dimensions, including:

- Student-teacher ratio
- Length of intervention sessions
- Frequency of intervention sessions
- Duration of the intervention period (e.g., extending an intervention from 5 weeks to 10 weeks)
- Type of intervention strategy or materials used
- Motivation strategies


RTI ‘Pyramid of Interventions’

- Tier 1: Universal Interventions. Available to all students in a classroom or school. Can consist of whole-group or individual strategies or supports.
- Tier 2: Individualized interventions. Subset of students receive interventions targeting specific needs. An RTI Team may assist with the plan.
- Tier 3: Intensive interventions. Students who are ‘non-responders’ to Tiers I & II may be eligible for special education services, intensive interventions.
Tier I Interventions

Tier I interventions are universal—available to all students. Teachers often deliver these interventions in the classroom.

Tier I interventions are those strategies that instructors are likely to put into place at the first sign that a student is struggling.

These interventions can consist of:
- Effective 'whole-group' teaching & management strategies
- Modest individualized strategies that the teacher uses with specific students.

Tier I interventions attempt to answer the question: Are routine classroom instructional strategies sufficient to help the student to achieve academic success?

Response to Intervention

Interventions, Accommodations & Modifications: Sorting Them Out

- **Interventions.** An academic intervention is a strategy used to teach a new skill, build fluency in a skill, or encourage a child to apply an existing skill to new situations or settings.

An intervention is said to be research-based when it has been demonstrated to be effective in one or more articles published in peer-reviewed scientific journals. Interventions might be based on commercial programs such as Read Naturally. The school may also develop and implement an intervention that is based on guidelines provided in research articles—such as Paired Reading (Topping, 1987).

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Examples of modifications are reducing the number of multiple-choice items in a test from five to four or shortening a spelling list. Under RTI, modifications are generally not included in a student’s intervention plan, because the working assumption is that the student can be successful in the curriculum with appropriate interventions and accommodations alone.
Tier 1: What Are the Recommended Elements of 'Core Curriculum'?: More Research Needed

"In essence, we now have a good beginning on the evaluation of Tier 2 and 3 interventions, but no idea about what it will take to get the core curriculum to work at Tier 1. A complicating issue with this potential line of research is that many schools use multiple materials as their core program." p. 640


RTI: Research Questions

Q: What is the nature of Tier I Instruction?

There is a lack of agreement about what we mean by 'scientifically validated' classroom (Tier I) interventions. Districts should establish a 'vetting' process—criteria for judging whether a particular instructional or intervention approach should be considered empirically based.


Team Activity: Tier 1: Classroom Interventions

As a group:

• Appoint a recorder.
• Review the Tier 1 (Classroom) Intervention Planner on p. 2.
• Discuss and jot down ways that your school can promote teachers' use of the form to document Tier 1 intervention strategies—e.g., by connecting use of the form to opportunities for team discussions of students or by identifying a roster of consultants in the school that teachers can seek out for intervention ideas.

Avoiding the 'Reprimand Trap'

When working with students who display challenging behaviors, instructors can easily fall into the 'reprimand trap'. In this sequence:

1. The student misbehaves.
2. The teacher approaches the student to reprimand and redirect. (But the teacher tends not to give the student attention for positive behaviors, such as paying attention and doing school work.)
3. As the misbehave-reprimand pattern becomes ingrained, both student and teacher experience a strained relationship and negative feelings.
Sample Ideas to Improve Relationships With Students: **The Two-By-Ten Intervention** (Mendler, 2000)

- Make a commitment to spend 2 minutes per day for 10 consecutive days in building a relationship with the student...by talking about topics of interest to the student.

Avoid discussing problems with the student’s behaviors or schoolwork during these times.


Sample Ideas to Improve Relationships With Students: **The Three-to-One Intervention** (Sprick, Borgmeier, & Nolet, 2002)

- Give positive attention or praise to problem students at least three times more frequently than you reprimand them.
- Give the student the attention or praise during moments when that student is acting appropriately. Keep track of how frequently you give positive attention and reprimands to the student.


Common Student Problems: What Works?

How Do Schools ‘Standardize’ Expectations for Tier I Interventions? A Four-Step Solution

1. Develop a list of your school’s ‘top five’ academic and behavioral referral concerns (e.g., low reading fluency, inattention).
2. Create a survey for teachers, asking them to jot down the ‘good teaching’ ideas that they use independently when they encounter students who struggle in these problem areas.
3. Collect the best of these ideas into a menu. Add additional research-based ideas if available.
4. Require that teachers implement a certain number of these strategies before referring to your RTI Intervention Team. Consider ways that teachers can document these Tier I interventions as well.

Good Behavior Game (Barrish, Saunders, & Wold, 1969)

The Good Behavior Game is a whole-class intervention to improve student attending and academic engagement. It is best used during structured class time: for example, whole-group instruction or periods of independent seatwork.

**Description:** The class is divided into two or more student teams. The teacher defines a small set of 2 to 3 negative behaviors. When a student shows a problem behavior, the teacher assigns a negative behavior ‘point’ to that student’s team. At the end of the Game time period, any team whose number of points falls below a ‘cut-off’ set by the teacher earns a daily reward or privilege.

**Guidelines for using this intervention:** The Game is ideal to use with the entire class during academic study or lecture periods to keep students academically engaged.
1. The instructor decides when to schedule the Game. (NOTE: Generally, the Good Behavior Game should be used for no more than 45 to 60 minutes per day to maintain its effectiveness.)

2. The instructor defines the 2-3 negative behaviors that will be scored during the Game. Most teachers use these 3 categories:
   - **Talking Out:** The student talks, calls out, or otherwise verbalizes without teacher permission.
   - **Out of Seat:** The student’s posterior is not on the seat.
   - **Disruptive Behavior:** The student engages in any other behavior that the instructor finds distracting or problematic.

3. The instructor selects a daily reward to be awarded to each member of successful student teams. (HINT: Try to select rewards that are inexpensive or free. For example, student winners might be given a coupon permitting them to skip one homework item that night.)

4. The instructor divides the class into 2 or more teams.

5. The instructor selects a daily cut-off level that represents the maximum number of points that a team is allowed (e.g., 5 points).

6. When the Game is being played, the instructor teaches in the usual manner. Whenever the instructor observes student misbehavior during the lesson, the instructor silently assigns a point to that student’s team (e.g., as a tally mark on the board) and continues to teach.

7. When the Game period is over, the teacher tallies each team’s points. Here are the rules for deciding the winner(s) of the Game:
   - Any team whose point total is at or below the pre-determined cut-off earns the daily reward. (NOTE: This means that more than one team can win!)
   - If one team’s point total is above the cut-off level, that team does not earn a reward.
   - If ALL teams have point totals that EXCEED the cut-off level for that day, only the team with the LOWEST number of points wins.

Here are some tips for using the Good Behavior Game:
- Avoid the temptation to overuse the Game. Limit its use to no more than 45 minutes to an hour per day.
- If a student engages in repeated bad behavior to sabotage a team and cause it to lose, you can create an additional ‘team of one’ that has only one member—the misbehaving student. This student can still participate in the Game but is no longer able to spoil the Game for peers!
- If the Game appears to be losing effectiveness, check to be sure it is being implemented with care and that you are:
  - Assigning points consistently when you observe misbehavior.
  - Not allowing yourself to be pulled into arguments with students when you assign points for misbehavior.
  - Reliably giving rewards to Game winners.
  - Not overusing the Game.

**RTI ‘Pyramid of Interventions’**

- **Tier 1:** Universal interventions. Available to all students in a classroom or school. Can consist of whole-group or individual strategies or supports.
- **Tier 2:** Individualized interventions. Subset of students receive interventions targeting specific needs. An RTI Team may assist with the plan.
- **Tier 3:** Intensive interventions. Students who are non-responders to Tiers I & II may be eligible for special education services, intensive interventions.
Tier 2: Efficient Delivery of Interventions in Small Groups

“...the critical component of tier 2 is to identify children who require remedial support and small-group interventions to accommodate the approximately 15% of the student population for whom tier 1 services are not sufficient...Therefore, tier 2 interventions have a standardized component to assure efficiency and are delivered in small groups of four to six students.” p. 6


Tier 2 Group-Based Interventions

Standard-Protocol (Standalone Intervention). Group intervention programs based on scientifically valid instructional practices ('standard protocol') are created to address frequent student referral concerns. These services are provided outside of the classroom. A middle school, for example, may set up a structured math-tutoring program staffed by adult volunteer tutors to provide assistance to students with limited math skills. Students referred for a Tier II math intervention would be placed in this tutoring program. An advantage of the standard-protocol approach is that it is efficient and consistent: large numbers of students can be put into these group interventions to receive a highly standardized intervention. However, standard group intervention protocols often cannot be individualized easily to accommodate a specific student's unique needs.


Tier 2: Setting an Minimum ‘Dose’ for Effective Intervention

“Interventions within tier 2 should be at least 30 minutes in length (except for the case of kindergarten students, who may be successful with 15- to 20-minute interventions) and should occur 3 to 5 times each week. It is important to note that this 30 minutes is in addition to—not instead of—90 minutes of reading instruction that occurs in general education.” p. 80


Tier 2: Exploring Use of Non-Instructional Personnel

“Peer tutors and adult volunteers are intriguing options for tier 2, and research has supported both within this model...Tutors may also include much older students, or paraprofessionals, or parent volunteers. It must be emphasized, though, that any tutor serving in an instructional role needs to have proper training and ongoing oversight of a teaching professional.” p. 90


Tier 2 Resources: Maintain Flexibility by Assigning to Grade Levels

If there are personnel resources available to support classroom RTI (e.g., paraprofessional time, push-in support available from a reading teacher), those resources should be allocated to the grade level, not to individual classrooms. This permits greater flexibility in moving resources around to target shifting student needs.

Response to Intervention

Scheduling Elementary Tier 2 Interventions

Option 1: Independent Scheduling. Teachers independently schedule their own Tier 2 intervention time. An advantage is flexibility. A disadvantage is that scheduling outside providers to assist is difficult.

Anyplace Elementary School: 9:00 a.m. – 9:30 a.m.

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Option 2: Schoolwide Shared Schedule. All teachers run Tier 2 interventions at the same time each day. An advantage is the ability to group students across classrooms and grades. A disadvantage is that outside providers cannot provide support to all classrooms.

Anyplace Elementary School: 9:00 a.m. – 9:30 a.m.

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Option 3: Floating RTI: Gradewide Shared Schedule. Each grade has a scheduled RTI time across classrooms. No two grades share the same RTI time. Advantages are that outside providers can move from grade to grade providing push-in or pull-out services and that students can be grouped by need across different teachers within the grade.

Anyplace Elementary School: RTI Daily Schedule

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Secondary Students: Should Interventions Be ‘Off-Level’ or Focus on Grade-Level Academics?

There is a lack of consensus about how to address the academic needs of students with deficits in basic skills in secondary grades (Espin & Tindal, 1998).

- Should the student be placed in remedial instruction at a point of ‘instructional match’ to address those basic-skill deficits? (Instruction is adjusted down to the student)
- Or is time better spent providing the student with compensatory strategies to learn grade-level content and ‘work around’ those basic-skill deficits? (Student is brought up to current instruction)

Response to Intervention

Caution About Secondary Tier 2 Standard-Protocol Interventions: Avoid the ‘Homework Help’ Trap

- Tier 2 group-based or standard-protocol interventions are an efficient method to deliver targeted academic support to students (Burns & Gibbons, 2008).
- However, students should be matched to specific research-based interventions that address their specific needs.
- RTI intervention support in secondary schools should not take the form of unfocused ‘homework help’.

Traditional Schedule: Tier 2 Intervention Delivery for ‘Standard Protocol’ Interventions

- Class length of 50-60 minutes
- 6-8 classes per day
- Typical solution: Students are scheduled for a remedial course. Drawbacks to this solution are that students may not receive targeted instruction, the teacher has large numbers of students, and students cannot exit the course before the end of the school year.
- Tier 2 Recommendation (Burns & Gibbon, 2008): Pair a reading interventionist with the content-area teacher. The reading teacher can provide remedial instruction to rotating small groups (e.g., 7-8 students) for 30 minute periods while the content-area teacher provides whole-group instruction to the rest of the class.

Block Schedule: Tier 2 Intervention Delivery for ‘Standard Protocol’ Interventions

- Class length of 1.5 to 2 hours
- Four classes per day
- Alternating schedule to accommodate full roster of classes in a year (either alternating days - AB- or alternating semesters- 4 X 4)
- Tier 2 Recommendation (Burns & Gibbon, 2008): Pair a reading interventionist with the content-area teacher. The reading teacher can provide remedial instruction to rotating small groups (e.g., 7-8 students) for 30 minute periods while the content-area teacher provides whole-group instruction to the rest of the class.

Team Activity: Tier 2: Scheduling Group Interventions

As a group:

- Discuss your school’s current system for identifying students for group interventions and for delivering those services.
- What are your schools strengths or challenges in running Tier 2 interventions?

Tier 3: Intensive Individualized Interventions

“Students who do not adequately respond to interventions provided in tiers 1 or 2 receive daily individualized interventions for at least 30 minutes per day with at least weekly progress monitoring in tier 3. These interventions are usually developed from a problem-analysis procedure often involving a problem-solving team and are delivered via general education. However, if the individualized interventions required for the child to be successful are expensively resource intensive, then special education resources would be committed to sustain success and the child would be identified as having a disability.” p. 6


Response to Intervention
### Tier 3 Interventions

**Problem-solving (Classroom-Based Intervention)**

Individualized research-based interventions match the profile of a particular student’s strengths and limitations. The classroom teacher often has a large role in carrying out these interventions. A plus of the problem-solving approach is that the intervention can be customized to the student’s needs. However, developing intervention plans for individual students can be time-consuming.

### The Problem-Solving Model & Multi-Disciplinary Teams

A school consultative process (‘the problem-solving model’) with roots in applied behavior analysis was developed (e.g., Bergan, 1995) that includes 4 steps:

- Problem Identification
- Problem Analysis
- Plan Implementation
- Problem Evaluation

Originally designed for individual consultation with teachers, the problem-solving model was later adapted in various forms to multi-disciplinary team settings.

**Source:**

### Tier 3 Targets: Intervention, Curriculum, and Environment

“For [a tier 3] intervention to be effective and robust, it must focus on the specific needs of the student. It should also address the reason that the student is experiencing difficulty…. Rather than considering a [student] problem to be the result of inalterable student characteristics, teams are compelled to focus on change that can be made to the intervention, curriculum or environment that would result in positive student outcome. The hypothesis and intervention should focus on those variables that are alterable within the school setting. These alterable variables include learning goals and objectives (what is to be learned), materials, time, student-to-teacher ratio, activities, and motivational strategies.” p. 95

**Source:**

### Advancing Through RTI: Flexibility in the Tiers

For purposes of efficiency, students should be placed in small-group instruction at Tier 2. In early reading instruction, this intervention option is usually simple to implement.

However, group interventions may not always be possible because – due to scheduling or other issues—no group is available. (For example, students with RTI behavioral referrals may not have a group intervention available.)

In such a case, the student will go directly to the problem-solving process (Tier 3)—typically through a referral to the school RTI Team.

Nonetheless, the school must still document the same minimum number of interventions attempted for every student in RTI, whether or not a student first received interventions in a group setting.

### Sample Application of an Intervention Idea Across Tiers
Increasing the Intensity of an Intervention: Key Dimensions

Interventions can move up the RTI Tiers through being intensified across several dimensions, including:

- Student-teacher ratio
- Length of intervention sessions
- Frequency of intervention sessions
- Duration of the intervention period (e.g., extending an intervention from 5 weeks to 10 weeks)
- Type of intervention strategy or materials used
- Motivation strategies


Paired Reading

The student reads aloud in tandem with an accomplished reader. At a student signal, the helping reader stops reading, while the student continues on. When the student commits a reading error, the helping reader resumes reading in tandem.

Paired Reading: Applications Across Tiers

- **Tier 1:** In the classroom, a 2nd grade teacher has set up a program for all of her students. Students from grade 5 (‘tutors’) visit the classroom three times per week. A tutor uses the Paired Reading intervention with one child for 15 minutes, then works with a second child for 15 minutes. The teacher circulates around the room, ensuring that tutors are using the correct procedures.

Paired Reading: Applications Across Tiers

- **Tier 2:** A school uses the ‘floating RTI’ model for scheduling RTI Tier 2 time. The entire 2nd grade does RTI between 9:45 and 10:15 each day. (Students who don’t require a Tier 2 intervention engage in other review activities during ‘RTI Time’.)

Five 2nd-grade children with similar reading-fluency delays are recruited from across the 4 classrooms. Those children are matched with adult volunteers who have been trained to use the Paired Reading intervention with them for five days per week, 30 minutes per session. A teacher is in the room working with a separate small group during the tutoring intervention. The teacher occasionally spot-checks to ensure that tutors are following the intervention protocol.

Paired Reading: Applications Across Tiers

- **Overview:**
  - Wilson Reading System® is a supplemental reading and writing curriculum designed to promote reading accuracy (decoding) and spelling (encoding) skills for students with word-level deficits. The program is designed to teach phonemic awareness, alphabetic principles (sound-symbol relationship), word study, spelling, sight word instruction, fluency, vocabulary, oral expressive language development, and comprehension. Students engage in a variety of activities in the classroom, including hearing sounds, practicing with syllable and word cards, listening to others read, and reading aloud and repeating what they have read in their own words. The program is designed to help children master new skills, with reviews reinforcing previous lessons. This program was designed for students in grade 2 and above. Fundations®, a related program not reviewed in this report, was recently developed with the same principle for students in kindergarten through third grade. In the single study reviewed by the WWC for this report, only the word-level components of Wilson Reading System® were implemented.

Paired Reading: Applications Across Tiers

- **Tier 3:** A 3rd grade student has a Tier 3 intervention plan developed by the school’s RTI Team, in which she attends a daily small-group (3-student) Wilson Reading intervention.

As an additional activity to promote reading fluency, the student also participates in a daily 15-minute Paired Reading session with a paraprofessional. These sessions are scheduled when the rest of the class is engaged in free reading. (Note that the Paired Reading intervention is part of a more comprehensive ‘intervention package’ for this student.)
Finding 'the Right Tier for the Job': Applying the '80-15-5 Rule (T. Christ, 2008):

- If less than 80% of students are successfully meeting academic or behavioral goals, the formative assessment focus is on the core curriculum and general student population (Tier 1).
- If no more than 15% of students are not successful in meeting academic or behavioral goals, the formative assessment focus is on small-group 'treatments' or interventions (Tier 2).
- If no more than 5% of students are not successful in meeting academic or behavioral goals, the formative assessment focus is on the individual student (Tier 3).


Baylor Elementary School : Grade Norms:
Correctly Read Words Per Min:
Sample Size: 23 Students

Group Norms: Correctly Read Words Per Min: Book 4-1: Raw Data
31 34 39 41 43 52 55 59 61 68 71 74 75 85 89 102 108 112 118
LOCAL NORMS EXAMPLE: Twenty-three 4th-grade students were administered oral reading fluency Curriculum-Based Measurement passages at the 4th-grade level in their school.

- In their current number form, these data are not easy to interpret.
- So the school converts them into a visual display—a box-plot—to show the distribution of scores and to convert the scores to percentile form.
- When Billy, a struggling reader, is screened in CBM reading fluency, he shows a SIGNIFICANT skill gap when compared to his grade peers.


What is the nature of Tier I Instruction?

There is a lack of agreement about what schools mean by 'scientifically validated' classroom (Tier I) interventions. Districts should establish a 'vetting' process—criteria for judging whether a particular instructional or intervention approach should be considered empirically based.
### Limitations of Intervention Research

"the list of evidence-based interventions is quite small relative to the need [of RTI]… Thus, limited dissemination of interventions is likely to be a practical problem as individuals move forward in the application of RTI models in applied settings." p. 33


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### An RTI Challenge: Limited Research to Support Evidence-Based Math Interventions

"… in contrast to reading, core math programs that are supported by research, or that have been constructed according to clear research-based principles, are not easy to identify. Not only have exemplary core programs not been identified, but also there are no tools available that we know of that will help schools analyze core math programs to determine their alignment with clear research-based principles." p. 459


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### Intervention ‘Research Continuum’

#### Evidence-Based Practices

"Includes practices for which original data have been collected to determine the effectiveness of the practice for students with disabilities. The research utilizes scientifically based rigorous research designs (i.e., randomized controlled trials, regression discontinuity designs, quasi-experiments, single subject, and qualitative research)."


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### Tier 2: What If There is No Commercial Intervention Package or Program Available?

"Although commercially prepared programs and the subsequent manuals and materials are inviting, they are not necessary. … A recent review of research suggests that interventions are research based and likely to be successful, if they are correctly targeted and provide explicit instruction in the skill, an appropriate level of challenge, sufficient opportunities to respond to and practice the skill, and immediate feedback on performance…the potential of interventions is likely to be a practical problem as individuals move forward in the application of RTI models in applied settings.” p. 33
Research-Based Elements of Effective Academic Interventions

- **'Correctly targeted'**: The intervention is appropriately matched to the student’s academic or behavioral needs.
- **'Explicit instruction'**: Student skills have been broken down into manageable and deliberately sequenced steps and providing overt strategies for students to learn and practice new skills (p.1153)
- **'Appropriate level of challenge'**: The student experiences adequate success with the instructional task.
- **'High opportunity to respond'**: The student actively responds at a rate frequent enough to promote effective learning.
- **'Feedback'**: The student receives prompt performance feedback about the work completed.


Staying Current on Intervention Research: Recommendations

- Bookmark intervention evaluation sites such as the What Works Clearinghouse (http://ies.ed.gov/ncee/wwc/) and check them periodically for updated information
- Appoint a ‘knowledge broker’ in your school for every major intervention target (e.g., reading fluency, reading comprehension, applied math concepts, acting-out behaviors). Allow that knowledge broker opportunities to stay current on intervention (and assessment) developments in their chosen intervention topic area.
- Put on the agenda for the RTI Steering Group to meet periodically to discuss intervention developments in those areas of high interest to your school. Discuss for example directions being pursued by your state education department (state standards, etc.), publication of national consensus documents (e.g., National Mathematics Advisory Panel Report of March 2008), etc.

Team Activity: Defining ‘Research-Based’ at your school

As a group:

- Discuss the current limitations in defining and identifying ‘research-based’ interventions.
- Brainstorm a plan for your school to help your RTI Steering Group to stay updated on the best academic or behavioral intervention strategies available.