

# The Primary-Grade Teacher as Classroom Intervention 'First Responder'

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*[www.interventioncentral.org](http://www.interventioncentral.org)*





*RTI Toolkit: A Practical Guide for Schools*

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## RTI: The Primary-Grade Teacher as Classroom Intervention 'First Responder'

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Access PPTs and other materials from this workshop at:

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# Response to Intervention

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July 22nd, 2013  
**How To: Teach Students to Change Behaviors Through Self-Monitoring**  
Student self-monitoring is an effective tool for behavior change that requires the student to take an active intervention role. Learn the 7steps to quickly set up a self-monitoring intervention.  
[Read more...](#)

Intervention Central provides teachers, schools and districts with free resources to help struggling learners and implement Response to Intervention and attain the Common Core State Standards. Spread the word about ICI [31 July 2013] Use Direct Instruction to Reach Struggling Learners. Teachers can make challenging academic material accessible by building assistance directly into instruction. This checklist is designed for general-education teachers and summarizes essential elements of a direct-instruction approach.





### Free Classroom Intervention Kit

	Intervention Planner for Academics	Manual	Sample Reading-Fluency Interventions
	Intervention Planner for Behavior	Manual	Sample Relationship-Building Strategies

### Featured Tools

- Academic Intervention Planner for Struggling Students
- Behavior Intervention Planner
- Behavior Rating Scales Report Card Maker
- ChartDog Graph Maker
- Dolch Wordlist Fluency Generator
- Early Math Fluency Generator
- Learning Disability Accommodations Finder
- Letter Name Fluency Generator
- Math Work - Math Worksheet Generator
- Reading Fluency Passages Generator
- Student Academic Success Strategies - Checklist Maker
- Student Rewards - Jackpot

## Workshop Topic

-  1. **Classroom RTI.** What does RTI for academic skills look like in the classroom, both in core instruction & intervention?
-  2. **Defining 'Intervention'.** What is an 'academic intervention'? And how does this term differ from 'accommodation' or 'modification'?
-  3. **Sampling Reading & Math Interventions.** What are examples of classroom reading and math interventions? And where can teachers find more such ideas?
-  4. **Data Collection.** What are examples of data collection that teachers can use to monitor classroom interventions?

## The Classroom Teacher as Intervention 'First Responder'

### *The Classroom & the RTI Model.*

What does RTI look like-and where does the classroom teacher fit into this model?

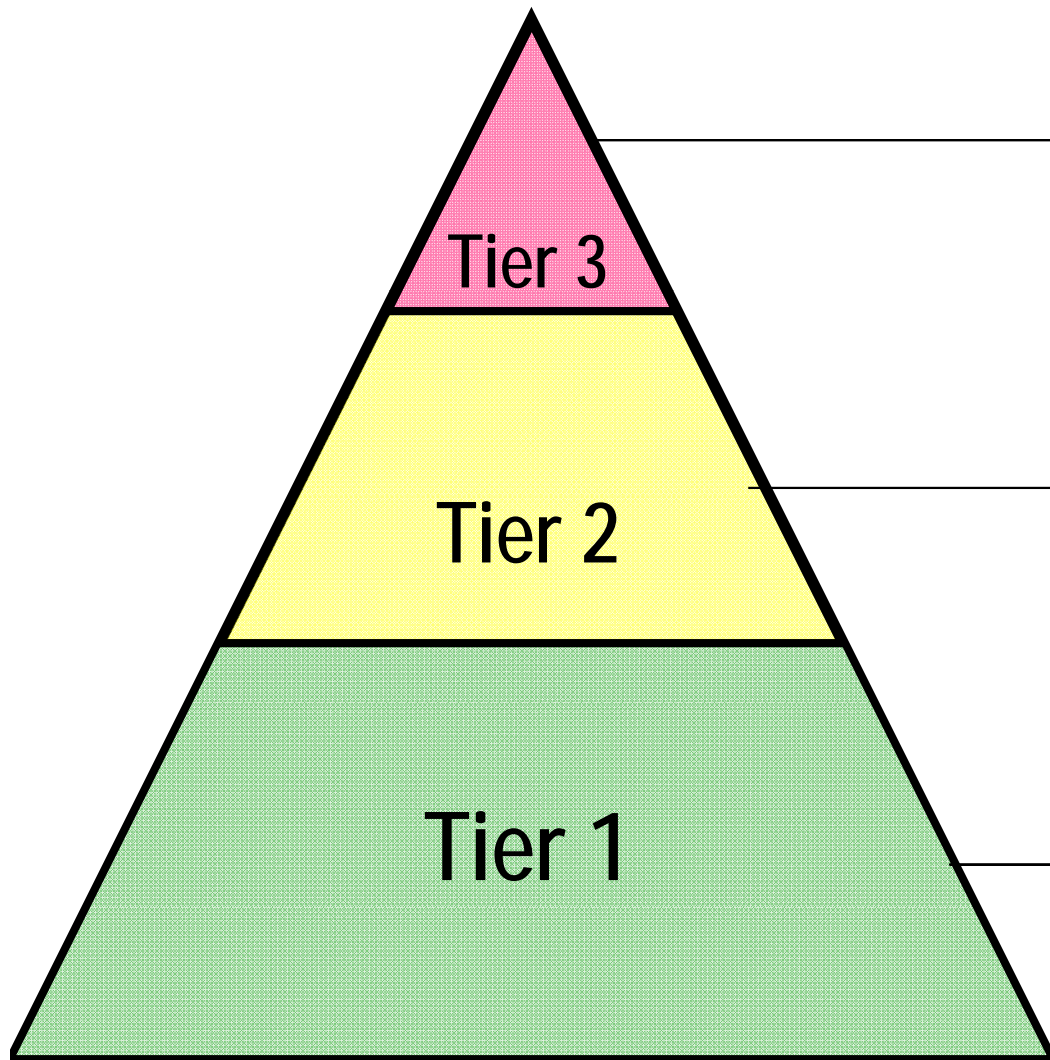


### Essential Elements of RTI (Fairbanks, Sugai, Guardino, & Lathrop, 2007)

1. A "continuum of evidence-based services available to all students" that range from universal to highly individualized & intensive
2. "Decision points to determine if students are performing significantly below the level of their peers in academic and social behavior domains"
3. "Ongoing monitoring of student progress"
4. "Employment of more intensive or different interventions when students do not improve in response" to lesser interventions
5. "Evaluation for special education services if students do not respond to intervention instruction"

*Source: Fairbanks, S., Sugai, G., Guardino, S., & Lathrop, M. (2007). Response to intervention: Examining classroom behavior support in second grade. Exceptional Children, 73, p. 289.*

### RTI 'Pyramid of Interventions'



***Tier 3: Intensive interventions.*** Students who are 'non-responders' to Tiers 1 & 2 are referred to the RTI Team for more intensive interventions.

***Tier 2 Individualized interventions.*** Subset of students receive interventions targeting specific needs.

***Tier 1: Universal interventions.*** Available to all students in a classroom or school. Can consist of whole-group or individual strategies or supports.



## Response to Intervention

### Scheduling Elementary Tier 2/3 Interventions

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

<i>Grade K</i>	Classroom 1	Classroom 2	Classroom 3	9:00-9:30
<i>Grade 1</i>	Classroom 1	Classroom 2	Classroom 3	9:45-10:15
<i>Grade 2</i>	Classroom 1	Classroom 2	Classroom 3	10:30-11:00
<i>Grade 3</i>	Classroom 1	Classroom 2	Classroom 3	12:30-1:00
<i>Grade 4</i>	Classroom 1	Classroom 2	Classroom 3	1:15-1:45
<i>Grade 5</i>	Classroom 1	Classroom 2	Classroom 3	2:00-2:30

*Source:* Burns, M. K., & Gibbons, K. A. (2008). Implementing response-to-intervention in elementary and secondary schools: Procedures to assure scientific-based practices. New York: Routledge.

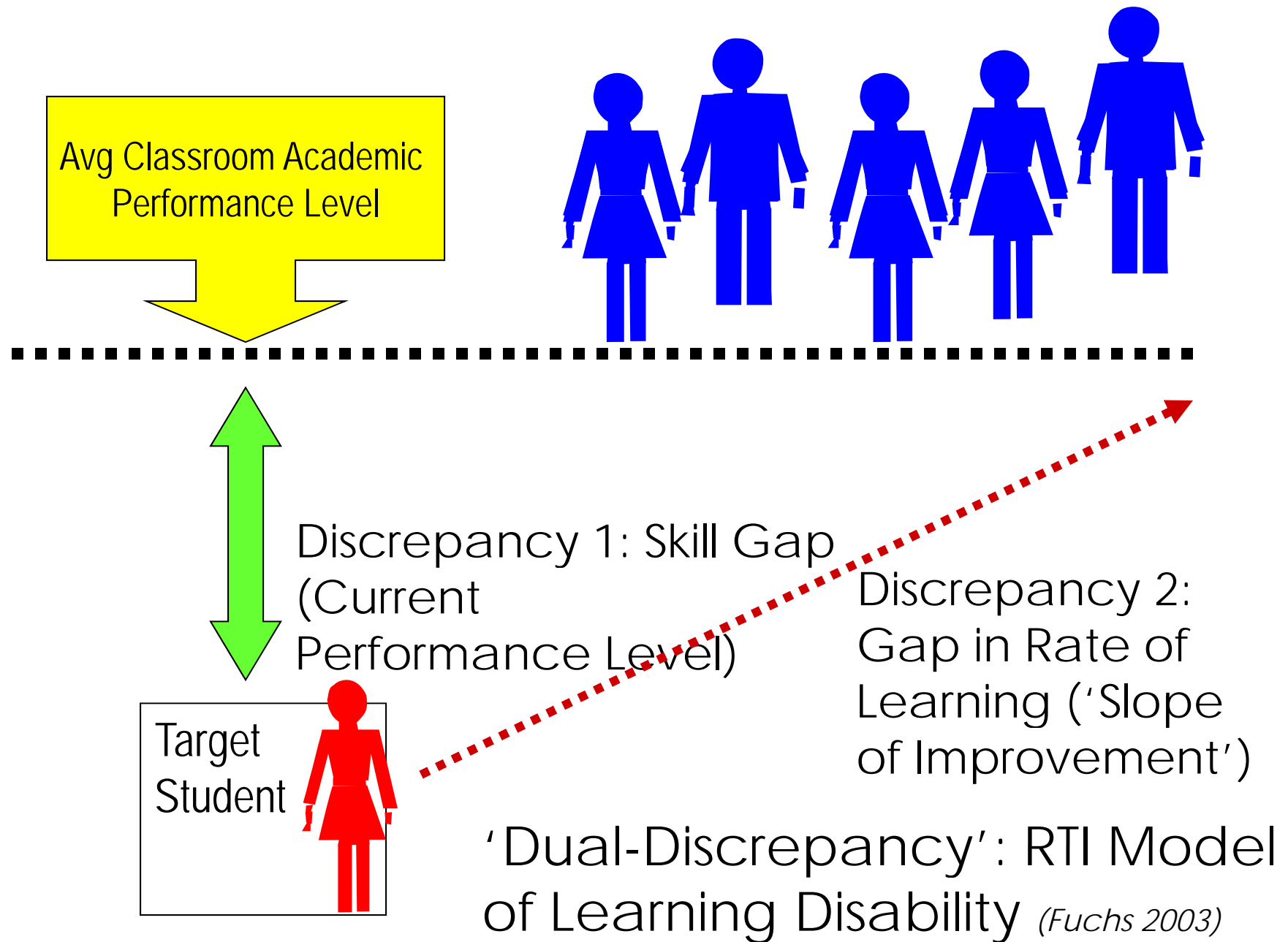
# RTI Assumption: Struggling Students Are 'Typical' Until Proven Otherwise...

RTI logic assumes that:

- A student who begins to struggle in general education is *typical*, and that
- It is general education's responsibility to find the instructional strategies that will unlock the student's learning potential

Only when the student shows through well-documented interventions that he or she has 'failed to respond to intervention' does RTI begin to investigate the possibility that the student may have a learning disability or other special education condition.

# Response to Intervention



Common Core State Standards Initiative  
<http://www.corestandards.org/>

View the set of Common Core Standards for English Language Arts (including writing) and mathematics being adopted by states across America.

Source: *National Governors Association Center for Best Practices and Council of Chief State School Officers. (2010). Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects.. Retrieved on September 23, 2012, from <http://www.corestandards.org/>; p. 6.*

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**Mission Statement**  
 The Common Core State Standards provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them. The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers. With American students fully prepared for the future, our communities will be best positioned to compete successfully in the global economy.

**Common Core State Standards Webinar**  
 Recorded Wednesday, June 30, 2010  
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**Download the Common Core State Standards**  
 » English Language Arts Standards » Mathematics Standards

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# Common Core State Standards: Supporting Different Learners in ELA

“The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom.”

Source: *National Governors Association Center for Best Practices and Council of Chief State School Officers. (2010). Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects.. Retrieved on September 23, 2012, from <http://www.corestandards.org/>; p. 6.*

## Common Core State Standards: Supporting Different Learners in ELA

"...It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-high school lives."

Source: *National Governors Association Center for Best Practices and Council of Chief State School Officers. (2010). Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects.. Retrieved on September 23, 2012, from <http://www.corestandards.org/>; p. 6.*

# Response to Intervention (RTI)

Response to Intervention (RTI) is a blue-print that schools can implement to proactively identify students who struggle with academic and/or behavioral deficits and provide them with academic and behavioral intervention support. RTI divides school support resources into 3 progressively more intensive levels--or 'tiers'--of intervention. RTI first gained national recognition when written into congressional legislation, the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004.

**Because the focus of RTI is on the underperforming learner, schools can use this approach as the 'toolkit' for helping struggling learners to attain the ambitious standards of the Common Core.**

### Gaining the Instructional Edge in the Elementary Grades



***RTI & Classwide Instruction.*** What does Response to Intervention look like at the classroom (Tier 1: Core Instruction) level?



# How To: Implement Strong Core Instruction pp. 2-4

When teachers must present challenging academic material to struggling learners, they can make that material more accessible and promote faster learning by building assistance directly into instruction. Researchers use several terms to refer to this increased level of student instructional support: explicit instruction, direct instruction, supported instruction (Rosenshine, 2008).

The checklist below summarizes the essential elements of a supported-instruction approach. When preparing lesson plans, instructors can use this resource as a 'pre-flight' checklist to make sure that their lessons reach the widest range of diverse learners.

1. Increase Access to Instruction	
Instructional Element	Notes
<input type="checkbox"/> <b>Instructional Match.</b> Lesson content is appropriately matched to students' abilities (Burns, VanDerHeyden, & Boice, 2008).	
<input type="checkbox"/> <b>Content Review at Lesson Start.</b> The lesson opens with a brief review of concepts or material that have previously been presented. (Burns, VanDerHeyden, & Boice, 2008, Rosenshine, 2008).	
<input type="checkbox"/> <b>Preview of Lesson Goal(s).</b> At the start of instruction, the goals of the current day's lesson are shared (Rosenshine, 2008).	
<input type="checkbox"/> <b>Chunking of New Material.</b> The teacher breaks new material into small, manageable increments, 'chunks', or steps (Rosenshine, 2008).	
2. Provided 'Scaffolding' Support	
Instructional Element	Notes
<input type="checkbox"/> <b>Detailed Explanations &amp; Instructions.</b> throughout the lesson, the teacher provides adequate explanations and detailed instructions for all concepts and materials being taught (Burns, VanDerHeyden, & Boice, 2008).	
<input type="checkbox"/> <b>Think-Alouds/Talk-Alouds.</b> When presenting cognitive strategies that cannot be observed directly, the teacher describes those strategies for students. Verbal explanations include 'talk-alouds' (e.g., the teacher describes and explains each step of a cognitive strategy) and 'think-alouds' (e.g., the teacher applies a cognitive strategy to a particular problem or task and verbalizes the steps in applying the strategy) (Burns, VanDerHeyden, & Boice, 2008, Rosenshine, 2008).	
<input type="checkbox"/> <b>Work Models.</b> The teacher makes exemplars of academic work (e.g., essays, completed math word problems) available to students for use as models (Rosenshine, 2008).	
<input type="checkbox"/> <b>Active Engagement.</b> The teacher ensures that the lesson engages the student in 'active accurate responding' (Skinner, Pappas & Davis, 2005) often enough to capture student attention and to optimize learning.	
<input type="checkbox"/> <b>Collaborative Assignments.</b> Students have frequent opportunities to work collaboratively--in pairs or groups. (Baker, Gersten, & Lee, 2002; Gettinger & Seibert, 2002).	
<input type="checkbox"/> <b>Checks for Understanding.</b> The instructor regularly checks for student understanding by posing frequent questions to the group (Rosenshine, 2008).	

# How To Implement Strong Core Instruction

## *Increase Access to Instruction*

1. **Instructional Match.** Lesson content is appropriately matched to students' abilities (Burns, VanDerHeyden, & Boice, 2008).
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# How To Implement Strong Core Instruction

## *Increase Access to Instruction*

3. **Preview of Lesson Goal(s).** At the start of instruction, the goals of the current day's lesson are shared (Rosenshine, 2008).
4. **Chunking of New Material.** The teacher breaks new material into small, manageable increments, 'chunks', or steps (Rosenshine, 2008).

# How To Implement Strong Core Instruction

## *Provide 'Scaffolding' Support*

1. **Detailed Explanations & Instructions.** Throughout the lesson, the teacher provides adequate explanations and detailed instructions for all concepts and materials being taught (Burns, VanDerHeyden, & Boice, 2008).
2. **Talk-Alouds/Think-Alouds.** Verbal explanations are given to explain cognitive strategies: 'talk-alouds' (e.g., the teacher describes and explains each step of a cognitive strategy) and 'think-alouds' (e.g., the teacher applies a cognitive strategy to a particular problem or task and verbalizes the steps in applying the strategy) (Burns, VanDerHeyden, & Boice, 2008, Rosenshine, 2008).

## How To Implement Strong Core Instruction

### *Provide 'Scaffolding' Support*

3. **Work Models.** The teacher makes exemplars of academic work (e.g., essays, completed math word problems) available to students for use as models (Rosenshine, 2008).
4. **Active Engagement.** The teacher ensures that the lesson engages the student in 'active accurate responding' (Skinner, Pappas & Davis, 2005) often enough to capture student attention and to optimize learning.

## How To Implement Strong Core Instruction

### *Provide 'Scaffolding' Support*

5. **Collaborative Assignments.** Students have frequent opportunities to work collaboratively--in pairs or groups. (Baker, Gersten, & Lee, 2002; Gettinger & Seibert, 2002).
6. **Checks for Understanding.** The instructor regularly checks for student understanding by posing frequent questions to the group (Rosenshine, 2008).

# How To Implement Strong Core Instruction

## *Provide 'Scaffolding' Support*

- 7. Group Responding.** The teacher ensures full class participation and boosts levels of student attention by having all students respond in various ways (e.g., choral responding, response cards, white boards) to instructor questions (Rosenshine, 2008).
- 8. High Rate of Student Success.** The teacher verifies that students are experiencing at least 80% success in the lesson content to shape their learning in the desired direction and to maintain student motivation and engagement (Gettinger & Seibert, 2002).

## How To Implement Strong Core Instruction

### *Provide 'Scaffolding' Support*

9. **Brisk Rate of Instruction.** The lesson moves at a brisk rate--sufficient to hold student attention (Carnine, 1976; Gettinger & Seibert, 2002).
10. **Fix-Up Strategies.** Students are taught fix-up strategies (Rosenshine, 2008) for use during independent work (e.g., for defining unknown words in reading assignments, for solving challenging math word problems).



# How To Implement Strong Core Instruction

## *Give Timely Performance Feedback*

1. **Regular Feedback.** The teacher provides timely and regular performance feedback and corrections throughout the lesson as needed to guide student learning (Burns, VanDerHeyden, & Boice).
2. **Step-by-Step Checklists.** For multi-step cognitive strategies, the teacher creates checklists for students to use to self-monitor performance (Rosenshine, 2008).

# How To Implement Strong Core Instruction

## *Provide Opportunities for Review & Practice*

1. **Spacing of Practice Throughout Lesson.** The lesson includes practice activities spaced throughout the lesson. (e.g., through teacher demonstration; then group practice with teacher supervision and feedback; then independent, individual student practice) (Burns, VanDerHeyden, & Boice).

# How To Implement Strong Core Instruction

## *Provide Opportunities for Review & Practice*

- 2. Guided Practice.** When teaching challenging material, the teacher provides immediate corrective feedback to each student response. When the instructor anticipates the possibility of an incorrect response, that teacher forestalls student error through use of cues, prompts, or hints. The teacher also tracks student responding and ensures sufficient success during supervised lessons before having students practice the new skills or knowledge independently (Burns, VanDerHeyden, & Boice, 2008).

## How To Implement Strong Core Instruction

### *Provide Opportunities for Review & Practice*

- 3. Support for Independent Practice.** The teacher ensures that students have adequate support (e.g., clear and explicit instructions; teacher monitoring) to be successful during independent seatwork practice activities (Rosenshine, 2008).
- 4. Distributed Practice.** The teacher reviews previously taught content one or more times over a period of several weeks or months (Pashler et al., 2007; Rosenshine & Stevens, 1995).

# Activity: Core Instruction Fidelity Checks

- Lembke et al (2012) recommend that schools periodically use teacher self-, collegial, or administrative checks to ensure that strong explicit core instruction is occurring in classes.
- Discuss how your school could use a 'core instruction' checklist like the one just reviewed to ensure strong Tier 1 (core) instruction across all classrooms.

## How To: Implement Strong Core Instruction

When teachers must present challenging academic material to struggling learners, they can make that material more accessible and promote faster learning by building assistance directly into instruction. Researchers use several terms to refer to this increased level of student instructional support: explicit instruction, direct instruction, supported instruction (Rosenshine, 2008).

The checklist below summarizes the essential elements of a supported-instruction approach. When preparing lesson plans, instructors can use this resource as a 'pre-flight' checklist to make sure that their lessons reach the widest range of diverse learners.

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<input type="checkbox"/> <b>Checks for Understanding.</b> The instructor regularly checks for student understanding by posing frequent questions to the group (Rosenshine, 2008).	

Source: Lembke, E. S., Hampton, D., & Beyers, S. J. (2012). Response to intervention in mathematics: Critical elements. *Psychology in the Schools*, 49(3), 257-272.

### Gaining the Instructional Edge in the Elementary Grades

*RTI & Individual Classroom Interventions.* What does Response to Intervention look like for an individual student (Tier 1: Intervention)?



### Tier 1: Teacher Consultation/Team

- At Tier 1, problem-solving occurs when the teacher meets briefly with a team (e.g., grade-level team, instructional team, department) or a consultant.
- The teacher defines the student problem(s), selects intervention(s), decides how to monitor the intervention, and documents the intervention plan—with the guidance of the team or consultant
- The teacher meets again with team or consultant several weeks later to check on the status of the intervention.
- The classroom teacher is the person primarily responsible for the integrity of the Tier 1 intervention plan.
- The numbers of students requiring Tier 1 interventions depends on district decision-rules defining classroom 'at-risk' status.

7 Essential 'Big Ideas' About  
Classroom Academic  
Interventions  
(Handout Available on  
Conference Page)





## Academic Intervention: 7 'Big Ideas'

- 1. Academic problems should be clearly defined.*
- 2. Academic problems should be linked to their probable cause.*
- 3. Intervention strategies should be research-based.*
- 4. Intervention plans should help students to access instruction--but not 'dumb down' instruction.*

## Academic Intervention: 7 'Big Ideas' (Cont.)

5. *Interventions should be documented in writing.*
6. *Interventions should be carried out with integrity.*
7. *Goal-setting and progress-monitoring should be a part of all academic interventions.*

### Academic Interventions: 7 'Big Ideas'

- *Academic problems should be clearly defined.* Before a teacher can select interventions to address a student academic problem, the instructor must be able to describe in clear and specific terms just what the student problem is. In fact, the most important step in the entire process of developing an intervention is to be able to describe correctly and specifically the problem that must be fixed (Bergan, 1995).

### Academic Interventions: 7 'Big Ideas'

- *Academic problems should be linked to their probable cause.* Once an academic problem has been defined, the teacher will want to develop a hypothesis ('educated guess') about what issue is causing that problem.

For example, a student may do poorly on a reading comprehension task because she lacks the necessary comprehension skills, is accurate but not yet fluent in those skills, had once learned those skills but failed to retain them, can perform the skills but has limited endurance, or possesses the skills but does not recognize situations when she should use them (Martens & Witt, 2004).

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### Academic Interventions: 7 'Big Ideas'

- *Intervention strategies should be research-based.* When possible, the teacher should include in an intervention plan only those ideas supported by research. At present, there is no consensus on how to define 'research-based' interventions (Odom et al., 2005). However, a sensible rule of thumb to follow is that an intervention idea should be shown as effective in at least one study published in a reputable peer-reviewed research journal before it is used in school intervention plans.

### Academic Interventions: 7 'Big Ideas'

- *Intervention plans should help students to access instruction-- but not 'dumb down' instruction.* When putting together classroom intervention plans, instructors can choose from among a wide array of strategies to help the student to achieve academic success. But teachers should take care not cross the line and modify core instruction for struggling general-education students; that is, they should not hold underperforming students to a lesser academic standard than their classmates (Tindal & Fuchs, 1999).

### Academic Interventions: 7 'Big Ideas'

- *Interventions should be documented in writing.* When a teacher commits to develop an academic intervention to support a student, that instructor should always create a written plan to document the intervention prior to implementing it (Burns & Gibbons, 2008).

Writing out intervention plans help teachers to carry them out more consistently and be able to produce the plans when needed as proof that they are providing at-risk students with ongoing assistance.

### Academic Interventions: 7 'Big Ideas'

- *Interventions should be carried out with integrity.* The teacher should monitor the integrity of any classroom intervention closely, ensuring that the actual intervention conforms as closely as possible to the guidelines contained in the written intervention plan (Gansle & Noell, 2007) and taking steps when needed to bring the intervention back into alignment with good practices.



### Academic Interventions: 7 'Big Ideas'

- *Goal-setting and progress-monitoring should be a part of all academic interventions.* At their core, academic interventions are intended to improve student performance (Duhon, Mesmer, Atkins, Greguson, & Olinger, 2009). But teachers cannot know with certainty whether a student is actually benefiting from an intervention unless they set specific outcome goals up front and then collect data periodically throughout the intervention to verify that these goals are met (Wright 2007).

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# How To: Create a Written Record of Classroom Interventions pp. 5-7

## Classroom Intervention Planning Sheet: Math Computation Example

This worksheet is designed to help teachers to quickly create classroom plans for academic and behavioral interventions. (For a tutorial on how to fill out this sheet, review the accompanying directions.)

Case Information			
What to Write: Record the important case information, including student, person delivering the intervention, date of plan, start and end dates for the intervention plan, and the total number of instructional weeks that the intervention will run.			
Student:	John Samuelson-Gr 4	Interventionist(s):	Mrs. Kennedy, classroom teacher
Date Intervention is to Start:	M 8 Oct 2012	Date Intervention is to End:	F 16 Nov 2012
		Date Intervention Plan Was Written:	10 October 2012
		Total Number of Intervention Weeks:	6 weeks
Description of the Student Problem:		Slow math computation speed (computes multiplication facts at 12 correct digits in 2 minutes, when typical gr 4 peers compute at least 24 correct digits).	

Intervention
What to Write: Write a brief description of the intervention(s) to be used with this student. TIP: If you have a script for this intervention, you can just write its name here and attach the script to this sheet.
<p><i>Math Computation Time Drill (Rhymer et al., 2002)</i></p> <p><i>Explicit time-drills are a method to boost students' rate of responding on arithmetic-fact worksheets: (1) The teacher hands out the worksheet. Students are instructed that they will have 3 minutes to work on problems on the sheet. (2) The teacher starts the stop watch and tells the students to start work. (3) At the end of the first minute in the 3-minute span, the teacher 'calls time', stops the stopwatch, and tells the students to underline the last number written and to put their pencils in the air. Then students are told to resume work and the teacher restarts the stopwatch. (4) This process is repeated at the end of minutes 2 and 3. (5) At the conclusion of the 3 minutes, the teacher collects the student worksheets.</i></p>

Materials	Training
What to Write: Jot down materials (e.g., flashcards) or resources (e.g., Internet-connected computer) needed to carry out this intervention.	What to Write: Note what training—if any—is needed to prepare adult(s) and/or the student to carry out the intervention.
Use math worksheet generator on <a href="http://www.interventioncentral.org">www.interventioncentral.org</a> to create all time-drill and assessment materials.	Meet with the student at least once before the intervention to familiarize with the time-drill technique and timed math computation assessments.

Progress-Monitoring		
What to Write: Select a method to monitor student progress on this intervention. For the method selected, record what type of data is to be used, enter student baseline (starting-point) information, calculate an intervention outcome goal, and note how frequently you plan to monitor the intervention. Tip: Several ideas for classroom data collection appear on the right side of this table.		
Type of Data Used to Monitor: Curriculum-based measurement: math computation assessments: 2 minute single-skill probes	<b>Ideas for Intervention Progress-Monitoring</b> <ul style="list-style-type: none"> <li>Existing data: grades, homework logs, etc.</li> <li>Cumulative mastery log</li> <li>Rubric</li> <li>Curriculum-based measurement</li> <li>Behavior report card</li> <li>Behavior checklist</li> </ul>	
Baseline		Outcome Goal
12 correct digits per 2 minute probe		24 correct digits per 2 minute probe
How often will data be collected? (e.g., daily, every other day, weekly): WEEKLY		

## Response to Intervention

# How To: Create a Written Record of Classroom Interventions

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Date Intervention is to Start:	<i>M 8 Oct 2012</i>	Date Intervention is to End:	<i>F 16 Nov 2012</i>	Total Number of Intervention Weeks:	<i>6 weeks</i>
Description of the Student Problem:		<i>Slow math computation speed (computes multiplication facts at 12 correct digits in 2 minutes, when typical gr 4 peers compute at least 24 correct digits).</i>			

## Response to Intervention

### How To: Create a Written Record of Classroom Interventions

Intervention
<b>What to Write:</b> Write a brief description of the intervention(s) to be used with this student. TIP: If you have a script for this intervention, you can just write its name here and attach the script to this sheet.
<i>Math Computation Time Drill.(Rhymer et al., 2002)-See attached description</i>

Materials	Training
<b>What to Write:</b> Jot down materials (e.g., flashcards) or resources (e.g., Internet-connected computer) needed to carry out this intervention.	<b>What to Write:</b> Note what training--if any--is needed to prepare adult(s) and/or the student to carry out the intervention.
<i>Use math worksheet generator on <a href="http://www.interventioncentral.org">www.interventioncentral.org</a> to create all time-drill and assessment materials.</i>	<i>Meet with the student at least once before the intervention to familiarize with the time-drill technique and timed math computation assessments.</i>

## Response to Intervention

# How To: Create a Written Record of Classroom Interventions

### Progress-Monitoring

**What to Write:** Select a method to monitor student progress on this intervention. For the method selected, record what type of data is to be used, enter student baseline (starting-point) information, calculate an intervention outcome goal, and note how frequently you plan to monitor the intervention. Tip: Several ideas for classroom data collection appear on the right side of this table.

Type of Data Used to Monitor: *Curriculum-based measurement: math computation assessments: 2 minute single-skill probes*

Baseline

*12 correct digits per 2 minute probe*

Outcome Goal

*24 correct digits per 2 minute probe*

How often will data be collected? (e.g., daily, every other day, weekly):

*WEEKLY*

#### Ideas for Intervention Progress-Monitoring

- Existing data: grades, homework logs, etc.
- Cumulative mastery log
- Rubric
- Curriculum-based measurement
- Behavior report card
- Behavior checklist

# How To: Create a Written Record of Classroom Interventions

## Classroom Intervention Planning Sheet: Math Computation Example

This worksheet is designed to help teachers to quickly create classroom plans for academic and behavioral interventions. (For a tutorial on how to fill out this sheet, review the accompanying directions.)

Case Information			
What to Write: Record the important case information, including student, person delivering the intervention, date of plan, start and end dates for the intervention plan, and the total number of instructional weeks that the intervention will run.			
Student:	John Samuelson-Gr 4	Interventionist(s):	Mrs. Kennedy, classroom teacher
Date Intervention is to Start:	M 8 Oct 2012	Date Intervention is to End:	F 16 Nov 2012
		Date Intervention Plan Was Written:	10 October 2012
		Total Number of Intervention Weeks:	6 weeks
Description of the Student Problem:		Slow math computation speed (computes multiplication facts at 12 correct digits in 2 minutes, when typical gr 4 peers compute at least 24 correct digits).	

Intervention
What to Write: Write a brief description of the intervention(s) to be used with this student. TIP: If you have a script for this intervention, you can just write its name here and attach the script to this sheet.
<p><i>Math Computation Time Drill (Rhymer et al., 2002)</i>  <i>Explicit time-drills are a method to boost students' rate of responding on arithmetic-fact worksheets: (1) The teacher hands out the worksheet. Students are instructed that they will have 3 minutes to work on problems on the sheet. (2) The teacher starts the stop watch and tells the students to start work. (3) At the end of the first minute in the 3-minute span, the teacher 'calls time', stops the stopwatch, and tells the students to underline the last number written and to put their pencils in the air. Then students are told to resume work and the teacher restarts the stopwatch. (4) This process is repeated at the end of minutes 2 and 3. (5) At the conclusion of the 3 minutes, the teacher collects the student worksheets.</i></p>

Materials	Training
What to Write: Jot down materials (e.g., flashcards) or resources (e.g., Internet-connected computer) needed to carry out this intervention.	What to Write: Note what training—if any—is needed to prepare adult(s) and/or the student to carry out the intervention.
Use math worksheet generator on <a href="http://www.interventioncentral.org">www.interventioncentral.org</a> to create all time-drill and assessment materials.	Meet with the student at least once before the intervention to familiarize with the time-drill technique and timed math computation assessments.

Progress-Monitoring		
What to Write: Select a method to monitor student progress on this intervention. For the method selected, record what type of data is to be used, enter student baseline (starting-point) information, calculate an intervention outcome goal, and note how frequently you plan to monitor the intervention. Tip: Several ideas for classroom data collection appear on the right side of this table.		
Type of Data Used to Monitor: Curriculum-based measurement: math computation assessments: 2 minute single-skill probes		<b>Ideas for Intervention Progress-Monitoring</b> <ul style="list-style-type: none"> <li>Existing data: grades, homework logs, etc.</li> <li>Cumulative mastery log</li> <li>Rubric</li> <li>Curriculum-based measurement</li> <li>Behavior report card</li> <li>Behavior checklist</li> </ul>
Baseline	Outcome Goal	
12 correct digits per 2 minute probe	24 correct digits per 2 minute probe	
How often will data be collected? (e.g., daily, every other day, weekly): WEEKLY		

Tier 1  
Elementary  
Level:  
Case Example:  
Colin: **Letter  
Identification**



## AIMSweb Cut-Points: Using National Aggregate Sample

- **Low Risk:** At or above the 25<sup>th</sup> percentile: *Core instruction alone is sufficient for the student.*
- **Some Risk:** 10<sup>th</sup> to 24<sup>th</sup> percentile: *Student will benefit from additional intervention, which may be provided by the classroom teacher or other provider (e.g., reading teacher).*
- **At Risk:** Below 10<sup>th</sup> percentile : *Student requires intensive intervention, which may be provided by the classroom teacher or other provider (e.g., reading teacher).*



## Case Example: Letter Naming

### The Concern

- In a mid-year (Winter) school-wide screening for Letter Naming Fluency, a first-grade student new to the school, Colin, was found have moderate delays when compared to peers. In his school, Colin fell below the 25<sup>th</sup> percentile compared with peers (AIMSweb norms). According to the benchmark norms, a student at the 25<sup>th</sup> percentile should read at least 38 letters per minute. Colin was able to read only 27 letters per minute. (NOTE: These results place Colin between the 10<sup>th</sup> and 25<sup>th</sup> percentile, a mild level of deficit—'Some Risk'.)
- Screening results, therefore, suggested that Colin has problems with Letter Naming. However, more information is needed to better understand this student academic delay.

## Response to Intervention

AIMSweb Letter Naming Fluency Norms: Gr 1  
25<sup>th</sup> percentile for Winter Screening: 38 letters  
per minute

Colin's Performance: 27 letters per minute

<b>AIMSweb® Growth Table</b>								
<b>Letter Naming Fluency</b>								
<b>Multi-Year Aggregate</b>								
<b>2006-2007 School Year</b>								
		Fall		Winter		Spring		
Grade	Percentile	Num	LNC	Num	LNC	Num	LNC	ROI
1	90	77585	63	5047	74	3286	82	0.5
	75		53		63		70	0.5
	50		41		52		57	0.4
	25		29		38		43	0.4
	10		18		19		25	0.2
	Mean		41		49		55	
	StdDev		18		21		23	

## Case Example: Letter Naming

### Instructional Assessment

- Colin's teacher, Ms. Tessia, sat with him and checked his letter knowledge. She discovered that, at baseline, Colin knew 23 lower-case letters and 19 upper-case letters. (Ms. Tessia defined 'knows a letter' as: "When shown the letter, the student can correctly give the name of the letter within 3 seconds.")
- Based on her findings, Ms. Tessia decided that Colin was still acquiring skill at letter names. He needed direct-teaching activities to learn to identify all of the letters.

# Case Example: Letter Naming

## Intervention

- Ms. Tessia decided to use 'incremental rehearsal' (Burns, 2005) as an intervention for Colin. This intervention benefits students who are still acquiring their math facts, sight words, or letters.

Students start by reviewing a series of 'known' cards. Then the instructor adds 'unknown' items to the card pile one at a time, so that the student has a high ratio of known to unknown items. This strategy promotes near-errorless learning.

- Colin received this intervention daily, for 10 minutes.
- NOTE: A paraprofessional, adult volunteer, or other non-instructional personnel can be trained to deliver this intervention.

*Source:* Burns, M. K. (2005). Using incremental rehearsal to increase fluency of single-digit multiplication facts with children identified as learning disabled in mathematics computation. *Education and Treatment of Children*, 28, 237-249.

# East Carolina University Evidence-Based Intervention Project

<http://ebi.missouri.edu/wp-content/uploads/2011/03/Incremental-Rehearsal-Intervention-Brief-2.pdf>

## Incremental Rehearsal Guidelines

*Common Reason for Academic Failure:* They have not spent enough time doing it  
*Intervention Name:* **Incremental Rehearsal**

*Brief Description:*

A student is presented with flashcards containing unknown items added in to a group of known items. Presenting known information along with unknown allows for high rates of success and can increase retention of the newly learned items, behavioral momentum and resulting time on task. Research shows that this technique can be used with sight/vocabulary words, simple math facts, letter names, and survival words/signs. In addition, this technique could be used for other facts, such as state capitals or the meanings of prefixes or suffixes, etc.

*What "common problems" does this address?*

Incremental Rehearsal increases fluency

*Procedures\*:*

1. Introduce a series of words or math facts on instructional level.
2. From these, identify at least 9 words or math facts that the child can read or answer correctly within 2 seconds. These are "knowns" and go into a stack.
3. Also, identify 10 words or math facts that the child cannot read or answer correctly within 2 seconds. These are "unknowns" and go into a different stack.
4. Take 9 cards from the known stack and 1 from the unknown stack.
5. Present the first known card and have the student read it aloud.
6. Present the unknown with the answer for math and the first and second known and have the child read or answer aloud.
7. Present the unknown with the answer for math and the first, second, third known and so on until all 9 knowns have been presented.
8. If the first unknown is now a known, it now replaces a previous known, which is then removed from the stack. Begin the procedure again at number 4 using a different unknown.
9. Repeat until all unknowns become knowns.

\*A complete sequence of flashcard presentation is provided in the Supplements section.

*Critical Components that must be implemented for the intervention to be successful:*

- There must be a clear understanding of the student's skill level. (Does the student have the skills necessary to use the flashcards?)
- Student is presented with material on a 90% known to 10% unknown ratio during trials. This ratio helps to produce *behavioral momentum*, which occurs when high rates of initial reinforcement 'get the ball rolling' so that when the student is presented with challenging material they are more likely to persevere. Allowing the student to produce high rates of success increases motivation to work through material that is unknown.

This manual was developed as a class project at East Carolina University. Correspondence concerning this manual should be addressed to Dr. T. Chris Riley-Tillman at the Department of Psychology, East Carolina University, Rowl Building, Greenville, North Carolina, 27658. Email: [triley@ecu.edu](mailto:triley@ecu.edu)  
Incremental Rehearsal Intervention Brief Revised 1 and Revisions - Author: David Rickel, M.Ed.

# Acquisition Stage: Incremental Rehearsal of Letter Names (Available On Conference Page)

Step 1: The tutor writes down on a series of flash cards the letters that the student needs to learn.

K	P	b
t	m	c
D	l	a
w	q	h
N	C	Y

# Incremental Rehearsal of Letter Names

Step 2: The tutor reviews the letter identification cards with the student. Any card that the student can answer within 2 seconds is sorted into the 'KNOWN' pile. Any card that the student cannot answer within two seconds—or answers incorrectly—is sorted into the 'UNKNOWN' pile.

## 'KNOWN' Letters

b	P
Y	C
h	q
D	a
m	t

## 'UNKNOWN' Letters

K
N
w
l
c

# Incremental Rehearsal of Letter Names

Step 3: The tutor is now ready to follow a nine-step incremental-rehearsal sequence: First, the tutor presents the student with a single index card containing an 'unknown' letter. The tutor reads the letter aloud, then prompts the student to read off the same unknown letter.



K



## Incremental Rehearsal of Letter Names

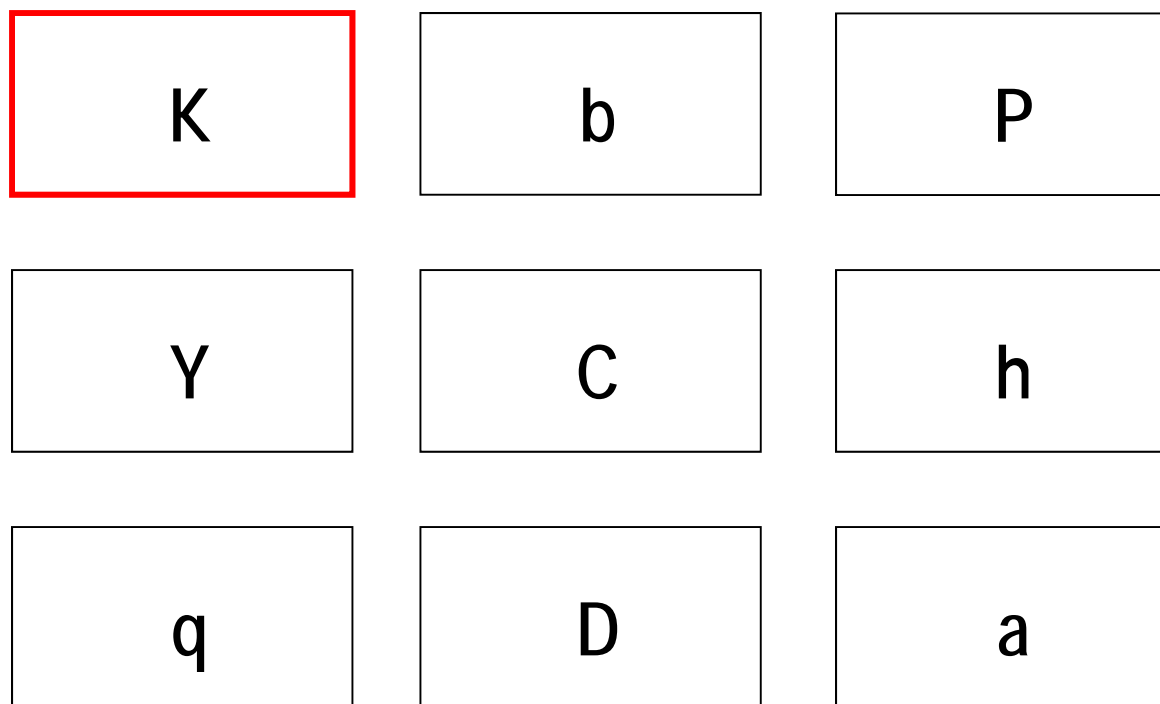
Step 3 (Cont.): Next the tutor takes a letter from the 'known' pile and pairs it with the unknown letter. When shown each of the two letters, the student is asked to identify it.

K

b

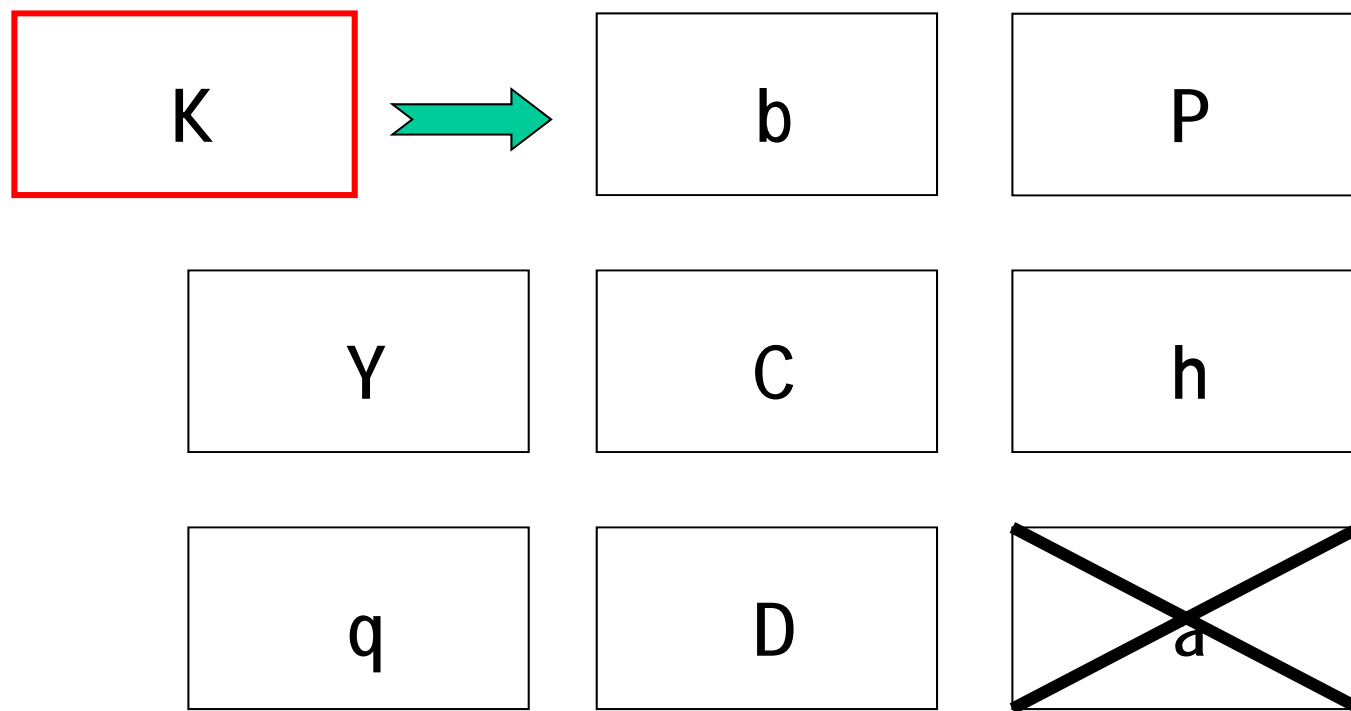
## Incremental Rehearsal of Letter Names

Step 3 (Cont.): The tutor then repeats the sequence--adding yet another known letter card to the growing deck of flash cards being reviewed and each time prompting the student to answer the whole series of letter names. This process continues until the review deck contains a total of one 'unknown' letter and eight 'known' letters (a high ratio of 'known' to 'unknown' material).



## Incremental Rehearsal of Letter Names

Step 4: At this point, the last 'known' letter that had been added to the student's review deck is discarded (placed back into the original pile of 'known' items) and the previously 'unknown' letter name is now treated as the first 'known' letter in new student review deck for future drills.



### Incremental Rehearsal of Letter Names

Step 4: The student is then presented with a new 'unknown' letter to identify- and the review sequence is once again repeated each time until the 'unknown' letter is grouped with nine 'known' letters—and on and on. Daily review sessions are discontinued either when time runs out or when the student answers an 'unknown' letter incorrectly three times.

**N**

**K**

**b**

**P**

**Y**

**C**

**h**

**Q**

**D**

## Case Example: Letter Naming

### Goal-Setting and Data Collection

- Ms. Tessia set the goals that, within 4 instructional weeks, Colin would:
  - identify all upper-case and lower-case letters.
  - move above the 25<sup>th</sup> percentile in Letter Naming Fluency when compared to grade-level peers (using the AIMSweb norms).
- The teacher collected two sources of data on the intervention:
  - At the end of each tutoring session, the tutor logged any additional formerly unknown letters that were now 'known' (that the student could now accurately identify within 3 seconds).
  - Each week, the teacher administered a one-minute timed Letter Naming Fluency probe and charted the number of correctly identified letters.

# Case Example: Letter Naming

Curriculum-Based Measurement: Letter Naming Fluency: Student Copy

I	J	N	D	T	c	P	l	p	j	h
G	F	L	n	q	K	W	s	i	k	Z
v	Q	f	A	g	x	R	u	m	E	d
S	w	b	t	O	H	U	a	Y	o	r
y	C	B	e	X	M	z	V	B	z	L
T	O	k	X	l	d	V	U	Y	b	h
Z	H	p	n	y	A	l	x	t	w	f
Q	i	r	e	R	c	g	P	J	M	o
m	a	N	G	S	K	q	W	D	u	C
v	j	s	F	E	J	i	o	x	z	G

Created at  
[www.interventioncentral.org](http://www.interventioncentral.org)

## Classroom Intervention Planning Sheet

### Case Information

**What to Write:** Record the important case information, including student, person delivering the intervention, date of plan, start and end dates for the intervention plan, and the total number of instructional weeks that the intervention will run.

Student:	Coin R.	Interventionist(s):	Mrs. Tessie	Date Intervention Plan Was Written:	7 Jan 2013
Date Intervention is to Start:	14 Jan 2013	Date intervention is to End:	22 Feb 2013	Total Number of Intervention Weeks:	6
Description of the Student Problem:		Student is still acquiring ability to name upper- and lower-case letters. Mastery standard: When shown the letter, the student can correctly give the name of the letter within 3 seconds			

### Intervention

**What to Write:** Write a brief description of the intervention(s) to be used with this student. TIP: If you have a script for the intervention, you can just write its name here and attach the script to this sheet.

*Incremental Rehearsal (see attached write-up)*

### Materials

**What to Write:** Jot down materials (e.g., flashcards) or resources (e.g., Internet-connected computer) needed to carry out this intervention.

Create weekly letter-identification monitoring sheets from Letter Name Fluency Generator:  
<http://www.interventioncentral.org/teacher-resources/letter-name-fluency-generator>

Create upper and lower-case letter flashcards

### Training

**What to Write:** Note what training—if any—is needed to prepare adult(s) and/or the student to carry out the intervention.

Provide training in incremental rehearsal to the part-time para-professional assigned to the classroom

### Progress-Monitoring

**What to Write:** Select a method to monitor student progress on this intervention. For the method selected, record what type of data is to be used, enter student baseline (starting-point) information, calculate an intervention outcome goal, and note how frequently you plan to monitor the intervention. Tip: Several ideas for classroom data collection appear on the right side of this table.

Type of Data Used to Monitor:

1. Each session: assessment and recording in each tutoring session of new letters mastered; 2. Weekly timed (1-min) letter-identification probes (curriculum-based measurement)

Baseline

Session assessments: Knows 23 lower-case and 19 upper-case letters/Weekly probes: 27 correct letters ID'd per min

Outcome Goal

Session assessments: Student will know all upper- and lower-case letters letters/Weekly probes: Student will identify at least 38 correct letters per min

How often will data be collected? (e.g., daily, every other day, weekly):

Session Assessments: Each student meeting; Probes: weekly

Ideas for Intervention Progress-Monitoring

- Existing data: grades, homework logs, etc.
- Cumulative mastery log
- Rubric
- Curriculum-based measurement
- Behavior report card
- Behavior checklist

## Response to Intervention

### Case Information

**What to Write:** Record the important case information, including student, person delivering the intervention, date of plan, start and end dates for the intervention plan, and the total number of instructional weeks that the intervention will run.

Student:	<i>Colin R.</i>	Interventionist(s):	<i>Mrs. Tessia</i>	Date Intervention Plan Was Written:	<i>7 Jan 2013</i>
Date Intervention is to Start:	<i>14 Jan 2013</i>	Date Intervention is to End:	<i>22 Feb 2013</i>	Total Number of Intervention Weeks:	<i>6</i>
Description of the Student Problem:	Student is still acquiring ability to name upper- and lower-case letters. Mastery standard: When shown the letter, the student can correctly give the name of the letter within 3 seconds				

### Intervention

**What to Write:** Write a brief description of the intervention(s) to be used with this student. TIP: If you have a script for this intervention, you can just write its name here and attach the script to this sheet.

*Incremental Rehearsal (see attached write-up)*



## Response to Intervention

Materials	Training
<p><b>What to Write:</b> Jot down materials (e.g., flashcards) or resources (e.g., Internet-connected computer) needed to carry out this intervention.</p>	<p><b>What to Write:</b> Note what training--if any--is needed to prepare adult(s) and/or the student to carry out the intervention.</p>
<p><i>Create weekly letter-identification monitoring sheets from Letter Name Fluency Generator:  <a href="http://www.interventioncentral.org/teacher-resources/letter-name-fluency-generator">http://www.interventioncentral.org/teacher-resources/letter-name-fluency-generator</a></i></p> <p><i>Create upper and lower-case letter flashcards</i></p>	<p><i>Provide training in incremental rehearsal to the part-time para professional assigned to the classroom</i></p>

### Progress-Monitoring

**What to Write:** Select a method to monitor student progress on this intervention. For the method selected, record what type of data is to be used, enter student baseline (starting-point) information, calculate an intervention outcome goal, and note how frequently you plan to monitor the intervention. Tip: Several ideas for classroom data collection appear on the right side of this table.

Type of Data Used to Monitor:

*1. Each session: assessment and recording in each tutoring session of new letters mastered; 2. Weekly timed (1-min) letter-identification probes (curriculum-based measurement)*

Baseline

*Session assessments: Knows 23 lower-case and 19 upper-case letters/Weekly probes: 27 correct letters ID'd per min*

Outcome Goal

*Session assessments: Student will know all upper- and lower-case letters letters/Weekly probes: Student will identify at least 38 correct letters per min*

How often will data be collected? (e.g., daily, every other day, weekly):

*Session Assessments: Each student meeting; Probes: weekly*

#### Ideas for Intervention Progress-Monitoring

- Existing data: grades, homework logs, etc.
- Cumulative mastery log
- Rubric
- Curriculum-based measurement
- Behavior report card
- Behavior checklist

## Case Example: Letter Naming

### Outcome

- Ms. Tessia discovered that Colin attained the first goal ('able to identify all upper-case and lower-case letters') within 2 weeks.
- Colin attained the second goal ('move above the 25<sup>th</sup> percentile in Letter Naming Fluency when compared to grade-level peers' by reading at least 38 letters per minute) within the expected four instructional weeks.
- Ms. Tessia then discontinued the intervention after four weeks, as Colin had moved into the average range with letter naming skills.

02:00

[www.interventioncentral.org](http://www.interventioncentral.org)

### *RTI & Tier 1 Interventions*

At your tables: Discuss the information shared at today's workshop on the teacher's role as Tier 1 (classroom) intervention 'first responder'.

Identify questions that you still have about this role...

# Gaining the Instructional Edge in the Elementary Grades



***RTI & Reading.*** What are examples of research-based reading interventions?

- Letter Cube Blending (Alphabetics/Phonics)
- *Word Boxes/Word Sort*
- Paired Reading (Fluency)

“Risk for reading failure always involves the interaction of a particular set of child characteristics with specific characteristics of the instructional environment. Risk status is not entirely inherent in the child, but always involves a “mismatch” between child characteristics and the instruction that is provided.” (Foorman & Torgesen, 2001; p. 206).

Source: Foorman, B. R., & Torgesen, J. (2001). Critical elements of classroom and small-group instruction promote reading success in all children. *Learning Disabilities Research & Practice*, 16, 203-212.

# Letter Cube Blending p. 10

d

i

r

- The Letter Cube Blending intervention targets alphabetic (phonics) skills. The student is given three cubes with assorted consonants and vowels appearing on their sides. The student rolls the cubes and records the resulting letter combinations on a recording sheet. The student then judges whether each resulting 'word' composed from the letters randomly appearing on the blocks is a real word or a nonsense word. The intervention can be used with one student or a group. (Florida Center for Reading Research, 2009; Taylor, Ding, Felt, & Zhang, 2011).

*Sources:* Florida Center for Reading Research. (2009). Letter cube blending. Retrieved from [http://www.fcrr.org/SCAsearch/PDFs/K-1P\\_036.pdf](http://www.fcrr.org/SCAsearch/PDFs/K-1P_036.pdf) Taylor, R. P., Ding, Y., Felt, D., & Zhang, D. (2011). Effects of Tier 1 intervention on letter-sound correspondence in a Response-to-Intervention model in first graders. *School Psychology Forum*, 5(2), 54-73.

# Letter Cube Blending

**PREPARATION:** Here are guidelines for preparing Letter Cubes:

- Start with three (3) Styrofoam or wooden blocks (about 3 inches in diameter). These blocks can be purchased at most craft stores.
- With three markers of different colors (green, blue, red), write the lower-case letters listed below on the sides of the three blocks--with one bold letter displayed per side.
  - Block 1: t, c, d, b, f, m: green marker
  - Block 2: a, e, i, o, u, i (The letter / appears twice on the block.): blue marker
  - Block 3: b, d, m, n, r, s: red marker
- Draw a line under any letter that can be confused with letters that have the identical shape but a different orientation (e.g., b and d).

*Sources:* Florida Center for Reading Research. (2009). Letter cube blending. Retrieved from [http://www.fcrr.org/SCAsearch/PDFs/K-1P\\_036.pdf](http://www.fcrr.org/SCAsearch/PDFs/K-1P_036.pdf)

Taylor, R. P., Ding, Y., Felt, D., & Zhang, D. (2011). Effects of Tier 1 intervention on letter-sound correspondence in a Response-to-Intervention model in first graders. *School Psychology Forum*, 5(2), 54-73.

## Letter Cube Blending

**INTERVENTION STEPS:** At the start of the intervention, each student is given a Letter Cube Blending Recording Sheet. During the Letter Cube Blending activity:

- 1. Each student takes a turn rolling the Letter Cubes.** The student tosses the cubes on the floor, a table, or other flat, unobstructed surface. The cubes are then lined up in 1-2-3 (green: blue: red) order.
- 2. The student is prompted to sound out the letters on the cubes.** The student is prompted to sound out each letter, to blend the letters, and to read aloud the resulting 'word'.

*Sources:* Florida Center for Reading Research. (2009). Letter cube blending. Retrieved from [http://www.fcrr.org/SCAsearch/PDFs/K-1P\\_036.pdf](http://www.fcrr.org/SCAsearch/PDFs/K-1P_036.pdf) Taylor, R. P., Ding, Y., Felt, D., & Zhang, D. (2011). Effects of Tier 1 intervention on letter-sound correspondence in a Response-to-Intervention model in first graders. *School Psychology Forum*, 5(2), 54-73.



# Letter Cube Blending

### INTERVENTION STEPS (Cont.):

3. **The student identifies and records the word as 'real' or 'nonsense'.** The student then identifies the word as 'real' or 'nonsense' and then writes the word on in the appropriate column on the Letter Cube Blending Recording Sheet.
4. **The activity continues to 10 words.** The activity continues until students in the group have generated at least 10 words on their recording sheets.

*Sources:* Florida Center for Reading Research. (2009). Letter cube blending. Retrieved from [http://www.fcrr.org/SCAsearch/PDFs/K-1P\\_036.pdf](http://www.fcrr.org/SCAsearch/PDFs/K-1P_036.pdf) Taylor, R. P., Ding, Y., Felt, D., & Zhang, D. (2011). Effects of Tier 1 intervention on letter-sound correspondence in a Response-to-Intervention model in first graders. *School Psychology Forum*, 5(2), 54-73.



National Reading Panel Report (2000): Conclusions Regarding Importance of Oral Reading Fluency:

“An extensive review of the literature indicates that classroom practices that encourage repeated oral reading with feedback and guidance leads to meaningful improvements in reading expertise for students—for good readers as well as those who are experiencing difficulties.”-p. 3-3

### Classroom Academic Interventions: Reading Fluency p. 33

- **PAIRED READING: INCREASE READING FLUENCY.** Teacher and student begin the session reading aloud in unison.

During the session, at the student's choosing, he/she gives a silent signal (e.g., lightly tapping the teacher's wrist); at this signal, the teacher stops reading aloud and instead follows along silently while the student continues to read aloud. Whenever the student commits a reading error or hesitates for 3 seconds or longer (during either unison or independent reading), the teacher corrects the error and resumes reading in unison.

05:00

[www.interventioncentral.org](http://www.interventioncentral.org)

# Group Activity: *Reading Interventions: Word Boxes/Word Sort*

At your tables:

- Read over the intervention 'Word Boxes/Word Sort' (pp. 13-18).
- Discuss how you might use a classroom strategy like this with your students.

Word Boxes: Phonics Practice Sheet

Student: \_\_\_\_\_ Date: \_\_\_\_\_ Interventionist: \_\_\_\_\_

1

-----

2

-----

3

-----

4

-----

5

# Gaining the Instructional Edge in the Elementary Grades



***RTI & Math.*** What are examples of research-based math interventions?

- Counting Board Game ('Number Sense')
- Strategic Counting Instruction
- Cover-Copy-Compare: Math Facts

# How Do We Reach Low-Performing Math Students?: Instructional Recommendations

Important elements of math instruction for low-performing students:

- “Providing teachers and students with data on student performance”
- “Using peers as tutors or instructional guides”
- “Providing clear, specific feedback to parents on their children’s mathematics success”
- “Using principles of explicit instruction in teaching math concepts and procedures.” p. 51

Source: Baker, S., Gersten, R., & Lee, D. (2002). A synthesis of empirical research on teaching mathematics to low-achieving students. *The Elementary School Journal*, 103(1), 51-73..

## Building Number Sense Through a Counting Board Game pp. 19-20

**DESCRIPTION:** The student plays a number-based board game to build skills related to 'number sense', including number identification, counting, estimation skills, and ability to visualize and access specific number values using an internal number-line (Siegler, 2009).

Source: Siegler, R. S. (2009). *Improving the numerical understanding of children from low-income families. Child Development Perspectives, 3(2), 118-124.*



# Building Number Sense Through a Counting Board Game

### MATERIALS:

- *Great Number Line Race!* form
- Spinner divided into two equal regions marked "1" and "2" respectively. (NOTE: If a spinner is not available, the interventionist can purchase a small blank wooden block from a crafts store and mark three of the sides of the block with the number "1" and three sides with the number "2".)

Source: Siegler, R. S. (2009). *Improving the numerical understanding of children from low-income families*. *Child Development Perspectives*, 3(2), 118-124.

# Response to Intervention

## The Great Number-Line Race!



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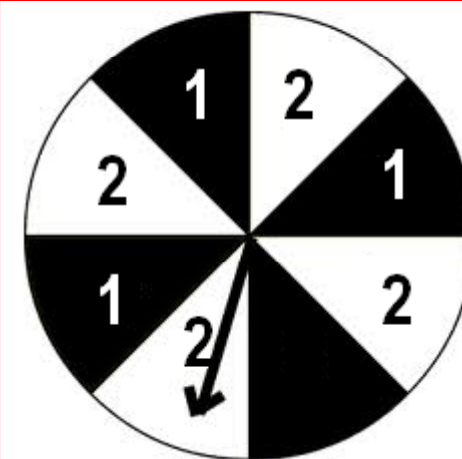


Date: \_\_\_\_\_ Start Time: \_\_\_\_\_: \_\_\_\_\_: \_\_\_\_\_ End Time: \_\_\_\_\_: \_\_\_\_\_

Directions: Mark the winner for each game with an 'X' in the table below.

Players	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7
1: _____							
2: _____							

Sources: Siegler, R. S. (2009). Improving the numerical understanding of children from low-income families. *Child Development Perspectives*,



Source: Siegler, R. S. (2009). Improving the numerical understanding of children from low-income families. *Child Development Perspectives*, 3(2), 118-124.

# Building Number Sense Through a Counting Board Game

**INTERVENTION STEPS:** A counting-board game session lasts 12 to 15 minutes, with each game within the session lasting 2-4 minutes. Here are the steps:

1. *Introduce the Rules of the Game.* The student is told that he or she will attempt to beat another player (either another student or the interventionist). The student is then given a penny or other small object to serve as a game piece. The student is told that players takes turns spinning the spinner (or, alternatively, tossing the block) to learn how many spaces they can move on *the Great Number Line Race!* board.

Each player then advances the game piece, moving it forward through the numbered boxes of the game-board to match the number "1" or "2" selected in the spin or block toss.

Source: Siegler, R. S. (2009). *Improving the numerical understanding of children from low-income families.* *Child Development Perspectives*, 3(2), 118-124.

# Building Number Sense Through a Counting Board Game

**INTERVENTION STEPS:** A counting-board game session lasts 12 to 15 minutes, with each game within the session lasting 2-4 minutes. Here are the steps:

1. *Introduce the Rules of the Game (cont.).*

When advancing the game piece, the player must call out the number of each numbered box as he or she passes over it. For example, if the player has a game piece on box 7 and spins a "2", that player advances the game piece two spaces, while calling out "8" and "9" (the names of the numbered boxes that the game piece moves across during that turn).

Source: Siegler, R. S. (2009). *Improving the numerical understanding of children from low-income families. Child Development Perspectives, 3(2), 118-124.*

# Building Number Sense Through a Counting Board Game

**INTERVENTION STEPS:** A counting-board game session lasts 12 to 15 minutes, with each game within the session lasting 2-4 minutes. Here are the steps:

- Record Game Outcomes.* At the conclusion of each game, the interventionist records the winner using the form found on the *Great Number Line Race!* form. The session continues with additional games being played for a total of 12-15 minutes.
- Continue the Intervention Up to an Hour of Cumulative Play.* The counting-board game continues until the student has accrued a total of at least one hour of play across multiple days. (The amount of cumulative play can be calculated by adding up the daily time spent in the game as recorded on the *Great Number Line Race!* form.)

Source: Siegler, R. S. (2009). *Improving the numerical understanding of children from low-income families.* *Child Development Perspectives*, 3(2), 118-124.

# Response to Intervention

## The Great Number-Line Race!



S  
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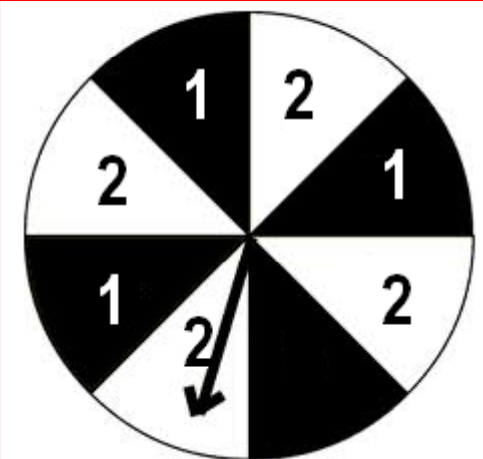


Date: \_\_\_\_\_ Start Time: \_\_\_\_\_: \_\_\_\_\_: \_\_\_\_\_ End Time: \_\_\_\_\_: \_\_\_\_\_

Directions: Mark the winner for each game with an 'X' in the table below.

Players	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7
1: _____							
2: _____							

Sources: Siegler, R. S. (2009). Improving the numerical understanding of children from low-income families. *Child Development Perspectives*,



Source: Siegler, R. S. (2009). *Improving the numerical understanding of children from low-income families. Child Development Perspectives*, 3(2), 118-124.

### Strategic Number Counting Instruction pp. 21-24

**DESCRIPTION:** The student is taught explicit number counting strategies for basic addition and subtraction. Those skills are then practiced with a tutor (adapted from Fuchs et al., 2009).

*Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties. Learning and Individual Differences 20(2), 89-100.*

# Strategic Number Counting Instruction

### MATERIALS:

- Number-line
- Number combination (math fact) flash cards for basic addition and subtraction
- *Strategic Number Counting Instruction Score Sheet*

Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties. *Learning and Individual Differences* 20(2), 89-100.



# Strategic Number Counting Instruction

**PREPARATION:** The tutor trains the student to use these two counting strategies for addition and subtraction:

- **ADDITION:** The student is given a copy of the number-line. When presented with a two-addend addition problem, the student is taught to start with the larger of the two addends and to 'count up' by the amount of the smaller addend to arrive at the answer to the problem.

E..g.,  $3 + 5 = \underline{\quad}$



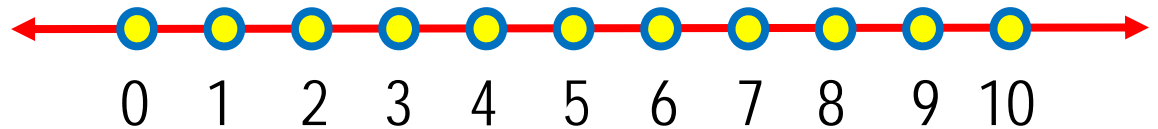
Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties. *Learning and Individual Differences* 20(2), 89-100.

# Strategic Number Counting Instruction

**PREPARATION:** The tutor trains the student to use these two counting strategies for addition and subtraction:

- **SUBTRACTION:** With access to a number-line, the student is taught to refer to the first number appearing in the subtraction problem (the minuend) as 'the number you start with' and to refer to the number appearing after the minus (subtrahend) as 'the minus number'. The student starts at the minus number on the number-line and counts up to the starting number while keeping a running tally of numbers counted up on his or her fingers. The final tally of digits separating the minus number and starting number is the answer to the subtraction problem.

E..g.,  $6 - 2 = \underline{\quad}$



Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties. *Learning and Individual Differences* 20(2), 89-100.

# Strategic Number Counting Instruction

**INTERVENTION STEPS:** For each tutoring session, the tutor follows these steps:

1. *Create Flashcards.* The tutor creates addition and/or subtraction flashcards of problems that the student is to practice. Each flashcard displays the numerals and operation sign that make up the problem but leaves the answer blank.

Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). *The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties.* *Learning and Individual Differences* 20(2), 89-100.

# Strategic Number Counting Instruction

**INTERVENTION STEPS:** For each tutoring session, the tutor follows these steps:

2. *Review Count-Up Strategies.* At the opening of the session, the tutor asks the student to name the two methods for answering a math fact. The correct student response is 'Know it or count up.' The tutor next has the student describe how to count up an addition problem and how to count up a subtraction problem. Then the tutor gives the student two sample addition problems and two subtraction problems and directs the student to solve each, using the appropriate count-up strategy.

Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). *The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties.* *Learning and Individual Differences* 20(2), 89-100.

# Strategic Number Counting Instruction

**INTERVENTION STEPS:** For each tutoring session, the tutor follows these steps:

3. *Complete Flashcard Warm-Up.* The tutor reviews addition/subtraction flashcards with the student for three minutes. Before beginning, the tutor reminds the student that, when shown a flashcard, the student should try to 'pull the answer from your head'—but that if the student does not know the answer, he or she should use the appropriate count-up strategy. The tutor then reviews the flashcards with the student. Whenever the student makes an error, the tutor directs the student to use the correct count-up strategy to solve. NOTE: If the student cycles through all cards in the stack before the three-minute period has elapsed, the tutor shuffles the cards and begins again. At the end of the three minutes, the tutor counts up the number of cards reviewed and records the total correct responses and errors.

Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). *The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties. Learning and Individual Differences 20(2), 89-100.*

# Strategic Number Counting Instruction

**INTERVENTION STEPS:** For each tutoring session, the tutor follows these steps:

4. *Repeat Flashcard Review.* The tutor shuffles the math-fact flashcards, encourages the student to try to beat his or her previous score, and again reviews the flashcards with the student for three minutes. As before, whenever the student makes an error, the tutor directs the student to use the appropriate count-up strategy. Also, if the student completes all cards in the stack with time remaining, the tutor shuffles the stack and continues presenting cards until the time is elapsed.

At the end of the three minutes, the tutor once again counts up the number of cards reviewed and records the total correct responses and errors.

Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). *The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties.* *Learning and Individual Differences* 20(2), 89-100.

# Strategic Number Counting Instruction

**INTERVENTION STEPS:** For each tutoring session, the tutor follows these steps:

5. *Provide Performance Feedback.* The tutor gives the student feedback about whether (and by how much) the student's performance on the second flashcard trial exceeded the first. The tutor also provides praise if the student beat the previous score or encouragement if the student failed to beat the previous score.

Source: Fuchs, L. S., Powell, S. R., Seethaler, P. M., Cirino, P. T., Fletcher, J. M., Fuchs, D., & Hamlett, C. L. (2009). The effects of strategic counting instruction, with and without deliberate practice, on number combination skill among students with mathematics difficulties. *Learning and Individual Differences* 20(2), 89-100.

# Response to Intervention

## Strategic Number Counting Instruction Score Sheet

### Strategic Number Counting Instruction Score Sheet

Student: \_\_\_\_\_ Interventionist(s): \_\_\_\_\_

Directions: During the strategic number counting instruction intervention, use this sheet to tally student responses: Number of Flash-Cards Known From Memory; Number of Flash-Cards Answered Correctly With Count-Up Strategy (with or without assistance); Number of Flash-Cards Unknown or Answered Incorrectly (even with assistance).

Date: _____	[Optional] Type/Range of Addition/Subtraction Math-Fact Flash-Cards Reviewed This Session:	
Trial 1: Math Flash-Card Warm-Up: 3 Minutes		
Number of Flash-Cards Known From Memory	Number of Flash-Cards Answered Correctly With Count-Up Strategy	Number of Flash-Cards Unknown or Answered Incorrectly
Trial 2: Math Flash-Card Review: 3 Minutes		
Number of Flash-Cards Known From Memory	Number of Flash-Cards Known From Memory	Number of Flash-Cards Known From Memory

Date: _____	[Optional] Type/Range of Addition/Subtraction Math-Fact Flash-Cards Reviewed This Session:	
Trial 1: Math Flash-Card Warm-Up: 3 Minutes		
Number of Flash-Cards Known From Memory	Number of Flash-Cards Answered Correctly With Count-Up Strategy	Number of Flash-Cards Unknown or Answered Incorrectly
Trial 2: Math Flash-Card Review: 3 Minutes		
Number of Flash-Cards Known From Memory	Number of Flash-Cards Known From Memory	Number of Flash-Cards Known From Memory



# Cover-Copy-Compare: Math Facts

Available on Conference Web Page

In this intervention to promote acquisition of math facts, the student is given a sheet with the math facts with answers. The student looks at each math model, covers the model briefly and copies it from memory, then compares the copied version to the original correct model (Skinner, McLaughlin & Logan, 1997).

Response

Cover-Copy-  
Compare Math  
Fact Student  
Worksheet

Worksheet: Cover-Copy-Compare student: \_\_\_\_\_ Date: \_\_\_\_\_

Spelling Words	Student Response
1. $9 \times 7 = 63$	1a. $9 \times 7 = 63$
	1b.
2. $9 \times 2 = 18$	2a.
	2b.
3. $9 \times 4 = 36$	3a.
	3b.
4. $9 \times 1 = 9$	4a.
	4b.
5. $9 \times 9 = 81$	5a.
	5b.
6. $9 \times 6 = 54$	6a.
	6b.
7. $9 \times 3 = 27$	7a.
	7b.
8. $9 \times 5 = 45$	8a.
	8b.
9. $9 \times 10 = 90$	9a.
	9b.
10. $9 \times 8 = 72$	10a.
	10b.

02:00

[www.interventioncentral.org](http://www.interventioncentral.org)

## Group Activity: *Math Interventions*

At your tables:

- Consider the math-intervention ideas shared here.
- Discuss how you might use one or more of these strategies in your classroom or school.

1. Counting Board Game (Number Sense)
2. Strategic Counting Instruction (Counting Skills/Math Facts)
3. Cover-Copy-Compare (Math Facts)



*Collecting Classroom Data:* What are examples of data collection in the classroom?

## Review of Selected Methods of Classroom Data Collection

1. Behavior Report Card
2. Curriculum-Based Measurement

### Interventions: The Essential Data Elements

1. **Clear problem definition:** 'If you can't name it, you can't measure it.'
2. **Baseline data:** 'If you don't know the student's starting point, you can't know if that student has made progress with the intervention.'
3. **Intervention outcome goal:** 'If you have no exit goal, you cannot judge if the intervention is successful—no matter how much data you collect.'
4. **Progress-monitoring plan:** 'If you don't actually collect the data, you are blind about the intervention outcome.'

*Source:* Witt, J. C., VanDerHeyden, A. M., & Gilbertson, D. (2004). Troubleshooting behavioral interventions. A systematic process for finding and eliminating problems. *School Psychology Review, 33*, 363-383.

RTI: Data-Informed Intervention

1



*Teacher-Friendly Data Collection*

*Method:*

*Behavior Report Card*

1

## The Problem That This Tool Addresses: Behavior Report Card

Most traditional methods of behavioral data collection are time-consuming to collect and difficult to juggle for a classroom teacher.

What is needed is a simple behavior-collection method that can be completed quickly and on a daily basis.



## Behavior Report Card: What It Is...

- A behavior report card is a customized *rating scale* created by the teacher to rate various target student behaviors on a daily basis.
- If a teacher can describe and observe a student behavior, it can be tracked using a behavior report card.
- Examples of behaviors to track using a behavior report card include: Hyperactivity, work completion, organizational skills, and compliance with teacher requests.

## Behavior Report Card Maker

- Helps teachers to define student problem(s) more clearly.
- Reframes student concern(s) as replacement behaviors, to increase the likelihood for success with the academic or behavioral intervention.
- Provides a fixed response format each day to increase the consistency of feedback about the teacher's concern(s).
- Can serve as a vehicle to engage other important players (student and parent) in defining the problem(s), monitoring progress, and implementing interventions.

# Response to Intervention

## Jim's Report Card

Student Name: Brian Date: \_\_\_\_\_

Rater: Mr. Wright Classroom: Classroom 345

Directions: Review each of the Behavior Report Card items below. For each item, rate the degree to which the student showed the behavior or met the behavior goal.

**Brian spoke respectfully and complied within 1 minute with adult requests without argument or complaint.**

The degree to which Brian met this behavior goal



Behavior Report Card

Met

www.interventioncentral.org  
Example: Daily Report Card

**Brian spoke respectfully and complied within 1 minute with adult requests without argument or complaint.**

The degree to which Brian met this behavior goal



**Brian went to the nurse only when needed.**

How well Brian did in meeting the behavior goal

1.....2.....3  
Poor Fair Good

**Brian spoke respectfully and complied within 1 minute with adult requests without argument or complaint.**

How well Brian did in meeting the behavior goal

1.....2.....3  
Poor Fair Good

# Behavior Report Card Maker

www.interventioncentral.org

## Behavior Report Card Maker

If you have any suggestions or comments about this tool, please mail me.

### Roy's Report Card

 Switch to Expert Mode

Save


Save as...

Start New Report Card


Step 1

#### Enter the basic form information

Behavior Report Cards are customized behavior rating forms that educators can use to evaluate the student's global behaviors on a daily basis or even more frequently. Use this application to create your own Behavior Report Card with rating items unique to the student that you are rating. Complete the fields below as the first step in creating your Behavior Report Card.

Report card title 


Roy's Behavior Report Card

Person to fill out the report card 


Mr. Wright

Directions 

Review each of the Behavior Report Card items below. For each item, rate the degree to which the student showed the behavior or met the behavior goal.

Student's classroom 

Room 345


Student's first and last name 


Roy

Atkins


Gender  male 

Font family  san serif  Font size  10 pt 

Append signature section 

Instructions for report card signer 

I have reviewed this completed Behavior Report with my child.

Person to sign the report card 

Parent

Previous

Next

# 2



*Teacher-Friendly Data Collection*

*Method:*

*Curriculum-Based*

*Measurement*

# 2

## The Problem That This Tool Addresses: Curriculum-Based Measurement

Often, measures of student academic performance are global (e.g., 'reading skill') and do not give good information about important component skills (e.g., 'reading fluency').

Also, traditional academic measures can be time-consuming to administer.

## Curriculum-Based Measurement: What It Is...

- Curriculum-Based Measurement (CBM) is a family of brief, timed measures that assess basic academic skills. CBMs have been developed to assess a considerable number of academic competencies, including oral reading fluency, reading comprehension, math computation, and written expression.

These measures are quick and efficient to administer; align with the curriculum of most schools; have good 'technical adequacy' as academic assessments; and use standard procedures to prepare materials, administer, and score.

## Curriculum-Based Measures (CBMs): For Grades K-1

<i>Curriculum-Based Measurement</i>	<i>Skill Area Assessed</i>	<i>Activity</i>
Letter Sound Fluency/Letter Name Fluency	Alphabetsics/ Phonics	1 Minute: Student reads letter names or sounds from a randomly generated list.
Oral Reading Fluency: Begins at Grade 1	Reading Speed; Comprehension (through Grade 3)	1 Minute: Student reads aloud from a text passage.
Early Math Fluency	Number Sense	1 Minute: Student completes an Early Math Fluency probe: (1) Quantity Discrimination; (2) Missing Number; (3) Number Identification
Computation Fluency: Begins at Grade 1	Math Fact Fluency	2 Minutes: Student completes math facts and receives credit for each <b>correct digit</b> .




## CBM Letter Knowledge: Letter Name Fluency (LNF) & Letter Sound Fluency (LSF)

- *CBM-Letter Name Fluency (LNF)*. The student is given a random list of upper- and lower-case letters and has 1 minute to identify the names of as many letters as possible.
- *CBM-Letter Sound Fluency (LSF)*. The student is given a random list of upper- and lower-case letters and has 1 minute to identify as many letter sounds as possible.

# Response to Intervention

## CBM-Letter Name Fluency/ Letter Sound Fluency Sample Probe

 Curriculum-Based Measurement: *Letter Naming Fluency: Examiner Copy*    #/Correct: \_\_\_\_\_ #/Errors: \_\_\_\_\_

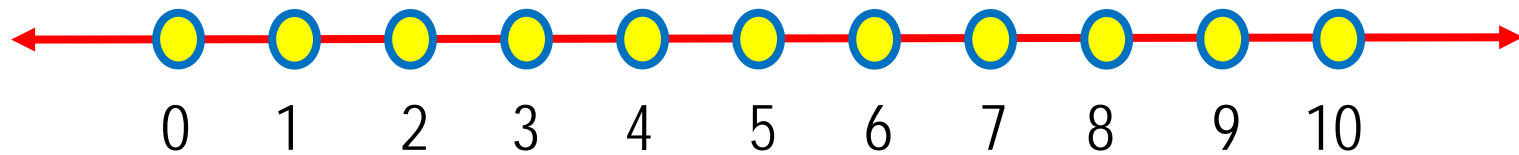
Student Name: \_\_\_\_\_ Classroom: \_\_\_\_\_ Date: \_\_\_\_\_

X	E	G	T	F	A	q	o	Y	I	J	/11(11)
j	D	i	l	u	k	v	d	L	z	s	/11(22)
H	e	a	M	f	S	C	K	w	R	c	/11(33)
B	g	b	t	W	U	P	r	y	V	x	/11(44)
Z	m	N	n	h	p	O	Q	N	i	X	/11(55)
P	u	b	F	m	z	q	H	j	B	E	/11(66)
G	f	o	W	Y	A	c	K	k	C	O	/11(77)
t	s	Z	Q	p	l	n	r	g	x	J	/11(88)
v	h	M	U	V	l	y	T	R	a	L	/11(99)
S	d	D	w	e	J	N	v	T	w	A	/11(110)

Source: Letter Naming Fluency Generator. Available at <http://www.interventioncentral.org/teacher-resources/letter-name-fluency-generator>

### Early Math Fluency: Measuring 'Number Sense'

- Early Math Fluency measures track primary-grade students' acquisition of number sense (defined as mastery of internal number line)



## Response to Intervention

# Early Math Fluency: Measuring 'Number Sense'

- **Quantity Discrimination** [1 minute]: The student is given a worksheet with number pairs and, for each pair, identifies the larger of the two numbers.

4
12

p. 54

Quantity Discrimination (QD): 1 Minute: The student is presented with pairs of numbers randomly sampled from 1-20 and must identify the larger number in each pair.

Grade	Fall QD (Chard et al., 2005)	Fall: +/-1 SD (≈16th%ile to 84th%ile)	Winter QD (Chard et al., 2005)	Winter: +/-1 SD (≈16th%ile to 84th%ile)	Spring QD (Chard et al., 2005)	Spring: +/-1 SD (≈16th%ile to 84th%ile)	Weekly Growth
K	15	8↔22	20	8↔32	23	12↔34	0.25
1	23	16↔30	30	21↔39	37	28↔46	0.44

Source: Chard, D. J., Clarke, B., Baker, S., Otterstedt, J., Braun, D., & Katz, R. (2005). Using measures of number sense to screen for difficulties in mathematics: Preliminary findings. *Assessment for Effective Intervention*, 30(3), 3-14.

## Response to Intervention

# Early Math Fluency: Measuring 'Number Sense'

- **Missing Number** [1 minute]: The student is given a worksheet with 4-digit number series with one digit randomly left blank and, for each series, names the missing number.

**14     \_     16     17**

p. 54

**Missing Number (MN): 1 Minute:** The student is presented with response items consisting of 3 sequential numbers with one of those numbers randomly left blank. (Each 3-number series is randomly generated from the pool of numbers 1-20.) The student attempts to name the missing number in each series.

Grade	Fall MN (Chard et al., 2005)	Fall: +/-1 SD (≈16th%ile to 84th%ile)	Winter MN (Chard et al., 2005)	Winter: +/-1 SD (≈16th%ile to 84th%ile)	Spring MN (Chard et al., 2005)	Spring: +/-1 SD (≈16th%ile to 84th%ile)	Weekly Growth
K	3	0↔7	10	3↔17	14	7↔21	0.34
1	9	3↔15	17	11↔23	20	14↔26	0.34

Source: Chard, D. J., Clarke, B., Baker, S., Otterstedt, J., Braun, D., & Katz, R. (2005). Using measures of number sense to screen for difficulties in mathematics: Preliminary findings. *Assessment for Effective Intervention*, 30(3), 3-14.

## Response to Intervention

# Early Math Fluency: Measuring 'Number Sense'

- **Number Identification** [1 minute]: The student is given a worksheet randomly generated numbers and reads off as many as possible within the time limit.

**34    37    50    38    1**

p. 54

**Number Identification (NID): 1 Minute:** The student is presented with a randomly generated series of numbers ranging from 1-20 and names as many of those numbers aloud as time allows.

Grade	Fall NID (Chard et al., 2005)	Fall: +/-1 SD (≈16th%ile to 84th%ile)	Winter NID (Chard et al., 2005)	Winter: +/-1 SD (≈16th%ile to 84th%ile)	Spring NID (Chard et al., 2005)	Spring: +/-1 SD (≈16th%ile to 84th%ile)	Weekly Growth
K	14	0↔28	45	27↔63	56	38↔74	1.31
1	34	18↔50	53	36↔70	62	46↔78	0.88

*Source: Chard, D. J., Clarke, B., Baker, S., Otterstedt, J., Braun, D., & Katz, R. (2005). Using measures of number sense to screen for difficulties in mathematics: Preliminary findings. Assessment for Effective Intervention, 30(3), 3-14.*

## Numberfly Early Math Fluency Generator

<http://www.interventioncentral.org>

Use this free online application to design and create Early Math Fluency Probes, including:

- Quantity Discrimination
- Missing Number
- Number Identification



The application to create CBM Early Math Fluency probes online

### Quantity Discrimination (QD)

**Description:** The student is given a sheet of number pairs and must verbally identify the larger of the two values for each pair.

Select the *lowest* and *highest* numbers to be selected in the quantity-discrimination items:

FROM 0

TO 20

How many quantify discrimination items should appear *in each row*?:

3 items

How many *rows* of items should appear on the student worksheet?:

8

Submit

**QD Directions:** Download directions for administering and scoring *Quantity Discrimination* probes, test statistics, & brief guidelines for use in an RTI process

**QD Graph:** Access a time-series graph to chart student progress using *Quantity Discrimination* probes

### Missing Number (MN)

**Description:** The student is given a sheet that contains a series of 3- or 4-number sequences. In each sequence, one number is missing. The student must verbally identify the missing number.

Select the *lowest* and *highest* numbers to be selected in the missing number items:

FROM 0

TO 20

How many missing number items should appear *in each row*?:

3 items

How many numbers should appear in *each number series*?:

3 items