Class-wide and Small-Group Intervention

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Education Research and Consulting, Inc.
Objectives

- How to identify the need for and deploy
  - Class-wide intervention in reading and math
  - Small-group interventions in reading and math
Use Data to change what happens between the Teacher and the Student

Highly effective teachers show gain of 1.5 grade equivalents. Ineffective teachers show gains of .5 grade equivalents. These gains are independent of other risk factors associated with demographics.
Measurement Should

Reynolds 1975: In today’s context the measurement technologies ought to become integral parts of instruction designed to make a difference not just a prediction in the lives of children and about their lives.
Consensus to

- **Prevent** most reading problems by reducing the # of children who enter school with poor emergent literacy skills (oral language, print knowledge, phonological processing skills)- National Reading Panel, 2000


- **Permit** school success by proactive and early training in “ready to learn” behaviors
Data allow us to

• Provide faster, more effective services for ALL children

• Work “smarter” not harder, better utilize the talents of the school psychologist and school-based assessment and intervention teams.

• Make implementation SIMPLE and EASY for teachers (low cost, few errors)

• Prevent diagnosis
Tier 1

• Provided to all students
• Fidelity to high-quality core curriculum
• Learning objectives are clear and paced
• Universal screening data are used to identify system targets and to evaluate overall learning progress (mastery of learning objectives, reduction of students at risk)
• Teachers consume data
Tier 2

- Supplements core instruction
- 10-20% of students may require
- Students grouped by intervention need (type and level)
- Progress monitored weekly
- Student groupings adjusted weekly
- Small-group, some class-wide intervention
- Ideal for fluency-building interventions
## Tier 3

- Supplements core and tier 2
- Requires a functional assessment of student performance to identify the right intervention for the student
- Weekly progress monitoring and troubleshooting of the intervention
- Ideal for acquisition interventions and may be combined with fluency-building components
Data = Fuel

- To determine risk
- To evaluate systemic problems
- To plan instructional changes system-wide
- To plan intervention for individual, small groups, or whole classes as supplement to core
- To evaluate intervention effects and inform referral decisions
How do I implement RTI? and what results can I expect if I do it well?

System to Enhance Educational Progress
STEERP
Tier 1: Screening

- Screening
  - Reading Screening
    - Oral Reading Fluency
    - Maze for grades 4 and up
  - Math Screening
    - 2 minutes. Scored for Digits Correct
    - Computation probes work well
    - Likely to use more than one probe
Class-wide Screening
Feedback to Teachers

Class Summary

Class of: [data]
Median: [data]
Mean: 21.11

Assessment Info: 9/16/02, Multiplication, Multiplication facts: 0 to 9

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Tier 1 or 2: Class-wide Intervention
No Class-wide Problem Detected

Class Wide Assessment Graph

Grade: 4    Mean: 58.73    Median: 59.5
Assessment Info: 1/23/2004, Multiple Skills, Progress Monitoring: Skill 1
Tier 2: Can’t Do/Won’t Do Assessment

“Can’t Do/Won’t Do”
Individually-administered

Materials
- Academic material that student performed poorly during class assessment.
- Treasure chest: plastic box filled with tangible items.

3-7 minutes per child
Can’t Do/Won’t Do Assessment
Decision Rule Following Can’t Do/Won’t Do Assessment

Class of:  
Median: 99  Mean: 105.26
Assessment Info: 9/16/2002, Class-Wide, Read Fourth
Tier 3: Individual Intervention
Response to Intervention

Before Intervention

During Intervention

Avg. for his Class

Each Dot is one Day of Intervention

Intervention in Reading
Response to Intervention

Before Intervention  |  During Intervention

#Correct

Avg. for his Class
If you want results,

- You must deliver and manage intervention effectively
- Use student learning data as constant arbiter of intervention efforts
- Evaluate the value of decisions made on targeted outcomes
  - Equity
  - Achievement gains
  - Eligibility decisions
For Assessment we must Ask

• What decision do we want to make (what is the purpose)?
• If it doesn’t lead to different action then we shouldn’t do it
• Generally, three purposes:
  • To determine risk
  • To evaluate programs of instruction
  • To inform instruction
• Choose the most efficient option with the best technical properties (standard admin, well-controlled materials available, reliability and validity evidence for our purpose).
Use Screening Data to

• Evaluate effects of core instruction
  • For all students
  • For vulnerable students

• Evaluate changes to core instruction

• Develop benchmarks for performance that predict outcomes you care about

• Evaluate programs locally based on data (e.g., special ed effects, Tier 2 and 3 intervention)
# Verify Screening Adequacy

**Checklist for Screening Data Interpretation**

<table>
<thead>
<tr>
<th>Check if true:</th>
<th>Screening Data May Be Used for Decision Making if the Following Conditions are Met:</th>
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<tbody>
<tr>
<td></td>
<td>Measure content is aligned with state standards and reflects a skill that students have been taught and must know how to do to benefit from upcoming instruction.</td>
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<td>Scores on Measure are predictive of future performance.</td>
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<td>Measure yields reliable scores.</td>
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<td>Measure is brief and efficiently administered.</td>
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<td>Measure yields scores that are sensitive to changes in learning over time.</td>
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<td>Assessment inventory was completed to prevent over-assessment.</td>
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<td>Procedures were used to ensure that data collection occurred accurately.</td>
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<td>Graphs were generated for classroom teachers showing each child’s performance relative to other children in the same class and a risk benchmark criterion.</td>
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<td>All students participated in screening.</td>
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<td>Schoolwide, grade-wide, and class-wide patterns of performance were evaluated to identify whether schoolwide, grade-wide, or class-wide problems were present.</td>
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</tbody>
</table>
Step-by-Step

1. Select Measures
2. Organize Materials
3. Train Teams to Administer
4. Conduct Screening Day
5. Organize Data
6. Make Decisions
Math Screening- Follow CCSS

• Emphasize Number through Grade 3
  • Operations
  • Relationships between operations
  • Place Value

• Grades 4 emphasize understanding of fractions

• Grade 5 emphasizes understanding of decimals and the rate of decomposition in moving from left to right (or composition in moving from right to left)
- Fluent add/sub 0-20 by Grade 2
- Fluent add/sub within 100 by Grade 3
- Fluent multiplication and division within 100 by Grade 3

- Explain relationships between operations by Grade 3 (e.g., can convert multiplication problems to addition, fact families, and vice versa)
- Multi-digit mult and div by Grade 4 with mathematical explanations
- Operations with decimals by Grade 5
- Operations with fractions by Grade 5
- Ratios, proportions, operations with fractions, factors, multiples, and negative numbers by Grade 6

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Remove System Barriers

• Scheduling

• Access to sufficiently controlled materials for practice and application

• Student performance data for progress monitoring and instructional decisions
Materials

• Assessment materials
• Digital timer
• Treasure Chest
• Excel for Graphs or Web-based system (e.g., isteep)
• Criteria for Decision Making
• Intervention Materials

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Train Teams

- Children should be arranged so that they cannot help one another.
- Adults should memorize the scripted instructions so that the adult can make eye contact with the children and ensure their full attention when the directions are given. It helps to use a dynamic voice, lots of eye contact, and a brisk pace.
- Adults should ensure correct completion of sample item by all students.
- Children should be prompted to turn the page and keep working until the time is up.
- Papers should be collected rapidly when time is up and adults must make sure all students stop working when the time is up.
Screening Guidelines

- Efforts at Tier 1 pay off with fewer children needing individual intervention
- 3 times per year, single probe
- Use small team of trained coaches
- Prepare all needed materials in a packet for each teacher
- Score and return within 1 week on graph
- Use data to generate aimlines, can be used to set benchmarks
Mult 0-9 4th Grade Fall Screening

School: Intermediate School
Teacher: Grade 4
Mean Score: 29.93, Median Score: 32

Assessment: 9/8/2010 - Math, Multiplication, Multiplication facts: 0 to 9

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Whole Grade by Teacher

Instructional Effects
Grade: 4, Date Range: 7/1/2010-10/30/2010
Assessment: Math, Multiplication, Multiplication facts: 0 to 9

Teachers

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Class-wide Problem?

No → Small Groups/Individual

Yes → Grade-wide Problem?

Yes → Treat GW Problem

No → Treat CW Problem
How Can RtI Help?

- Use screening data to connect instructional strategies to student proficiency for the whole class.
- Organize small groups based on student proficiency (acquisition, fluency, generalization).
- Use Class-wide intervention to build fluency in pre-requisite skills (I’ll explain).
- Use intensive, individualized interventions to conduct acquisition interventions following functional academic assessment.
Ready for more challenging work

Current-level instruction

Require support to prevent errors
If Grade-wide Problem

- Curriculum
- Calendar of instruction
- Mastery of prereq skills
- Instructional Basics
- Check Patterns
  - Isolated to one grade level or pervasive?
  - Disproportionate effects?
  - Related to grouping or inadvertent tracking?
  - Deficient skills from previous year?
Prevent Recurrence

- How can problem be identified earlier?
- Can supplemental intervention occur in preceding year or semester?
- Does calendar need revision? More instruc time needed in preceding or current year?
- Are materials and instruction optimized?
- More frequent progress monitoring
- Re-structure planning periods to serve as data-teams. Mentor school- and grade-level leadership.
If Class-wide Problem

- Check adherence to curric
- Check adherence to calendar
- Mastery of prereq skills
- Increase progress monitoring
- Check instruc basics during core
- Provide class-wide intervention
- Examine Patterns
  - Characteristics of teacher or teaching environment
  - Isolated to one class or multiple classes? Common features?
  - Disproportionate effects
  - Related to grouping or inadvertent tracking
  - Deficient skills from previous year?
Prevent Recurrence

- More frequent monitoring
- If common feature among classes, address through professional support (e.g., first-year teachers)
- Focus professional development
- Continue ongoing progress monitoring to permit early detection
Most Common Core Fixes

- Specify Essential Skills
- Map Essential Skills onto Calendar of Instruction
- Use Assessment to Verify Mastery according to Timeline
- Maximize Instructional Time
- Integrate Instruction with Student Proficiency
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<tr>
<th>Cue</th>
<th>Clear</th>
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<th>Student Response</th>
<th>Feedback Matched to Response</th>
<th>Feedback Not Matched to Response</th>
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1. Were all transition times shorter than 2 minutes?
2. Did 100% of incorrect student responses receive corrective feedback?
3. Was the feedback accurate?
4. Were students actively engaged during instruction (on-task and responding for greater than 70% of observation intervals)?
5. Were any cues unclear?
6. Are students responding inaccurately greater than 90% of occasions during lesson?
7. Were students accurately responding prior to beginning independent practice and delayed feedback?
8. Is coaching needed to improve clarity of cues or use of graduated prompts to establish more accurate responding?
9. Is coaching needed to improve frequency of student responding?
10. Is coaching needed to improve quality and frequency of feedback (feedback should establish correct responding on subsequent trials within session)?
Small Group Problem

- Use Tier 2 time to provide more explicit instruction following standard protocol.

- Monitor weekly. Exit students based on post-intervention performance not in the risk range on lesson objectives and screening criterion.

- When most children are responding well, identify children for Tier 3.
Tier 2

• About 90% of children should respond successfully to Tier 2 intervention

• Successful responders should surpass screening criterion at higher rates on subsequent screenings.

• Successful responders should pass high-stakes at higher rates than before use of Tier 2 strategies.
Individual Problem?

- Conduct individual assessment to establish targets, identify effective intervention, and specify baseline.
- Prepare all materials
- Monitor weekly and troubleshoot to accelerate growth
Tier 3

• Most children participating in Tier 3 should respond successfully. More than 5% of screened pop is a red flag.

• Focus on integrity of intervention.

• Growth should be detectable within two weeks.

• Troubleshoot interventions that aren’t working.
Tier 3

- Successful responders to Tier 3 should fall into risk range on subsequent screenings at lower rates.
- Successful responders should pass high-stakes at higher rates.
- Unsuccessful responders should qualify for more intensive instruction at higher rates.
- Responders/nonresponder should be proportionate by demographics.
Roadmap to Lesson Planning

- What must students know?
- Do students understand? Can they do it?
- How will you
  - Establish conceptual understanding?
  - Build fluency?
  - Provide applied practice and discussion?
Foundations of Core Instruction

- Align reading passage difficulty with student proficiency (greater than 90% accuracy)
- Adequate time and opportunity to read at instructional level
- Use vocabulary preview to increase instructional match
- Use listening passage preview (you can use audio files and listening stations)
Foundations of Core Instruction

- Teach phonological awareness and decoding strategies systematically and explicitly
- Introduce high-frequency, non-decodable words systematically
- Provide antecedent support for correct reading of high-freq words in text (e.g., highlight)
- Use incremental rehearsal to teach high-frequency words
<table>
<thead>
<tr>
<th>Trial 1</th>
<th>Trial 2</th>
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Reading Instruction

- Select evidence-based Tier 1 supplement like Peer-Assisted Learning Strategies (from Vanderbilt) or Phonological Awareness Literacy Screening (from FCRR)
Reading Instruction

• Provide structured opportunities to discuss texts and integrate with writing opportunities (cloze, guided questions, and journal responses)

• Use monthly progress monitoring
  • To identify students at risk
  • To determine whether skills need to be re-taught to the class as a whole
Meeting the Needs of All Learners

Select a Few Good Interventions to Keep it Simple

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<thead>
<tr>
<th></th>
<th>Classwide</th>
<th>Individual</th>
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<tbody>
<tr>
<td><strong>Math</strong></td>
<td>Flash card Practice</td>
<td>Cover copy compare Cue Cards Highlighted errors</td>
</tr>
<tr>
<td><strong>Reading</strong></td>
<td>Listening Preview</td>
<td>Repeated Readings Error Correction Key Words</td>
</tr>
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Reading Classwide Intervention

This intervention is designed to **build reading fluency and increase accuracy**. Requires approximately 15 minutes each day.

**Materials needed:** digital timer, teacher and student reading folder containing reading probes (1 probe for every student), and pencils.

**Teacher Coach Card** (conduct these steps every day):

1. Instruct students to take out a pencil, their reading folder and find their reading partner quickly and quietly.
2. Tell students, **“Write your partner’s name on the back of your story.”**
3. Tell students to follow the story as they listen to you read the story out loud.
4. Set timer for 2 minutes and tell students, **“Begin practicing. One partner reads out loud while the other partner follows and corrects a misread or stuck word”**
5. Set timer for 2 minutes and tell students, **“Trade jobs and begin practicing.”**
6. When timer rings, tell students, **“One partner will read for one minute. The other partner’s will correct a misread or stuck word and circle any missed words on your story.”**
7. Set timer for 1 minute. Say, **“On your mark, get set.”** Begin the timer, and say, **“Go.”**
8. When the timer rings, tell students, **“Stop. Mark the last word that was read on your story.”**
9. Tell students **“Write your score on your progress chart”**
10. Set timer for 1 minute. Say, **“Trade jobs. On your mark, get set.”** Begin the timer, and say, **“Go.”**
11. When the timer rings, tell students, **“Stop. Mark the last word that was read on your story.”**
12. Tell students **“Count the number of words that are not circled on your story. Write your score on your progress chart and pass your stories to the front so I can pick them up.”**
13. Shuffle the stories. **Randomly draw a story from the stack.** If the score on this randomly selected story is higher than the randomly selected score from the day before (or the class median if you have calculated it), then deliver a classwide reward (e.g., 5 minutes free time).
READING PARTNERS INTERVENTION

STEP 1: GET READY
Take out pencil, folder, one story, and chart. Write your name on story, trade stories, and raise pencils in the air.

STEP 2: LISTEN
Follow along as the teacher reads the story.

STEP 3: PRACTICE
PARTNER 1 reads.
PARTNER 2 LISTEN AND SAY misread and stuck words until timer rings.
Trade jobs

STEP 4: 1 minute TIMED READING
PARTNER 1 reads
PARTNER 2 LISTEN and SAY and CIRCLE misread or stuck words. When timer rings, draw a line / at last word read.
Trade jobs

STEP 5: COUNT AND CHART
Count every word that is not circled.
Write the score on the story page and on your chart.
Reading classwide intervention
Implementation Process

STEP 1: Preparing for Training Day
STEP 2: Implementing the Training Day script
STEP 3: Coaching the Reading Partners Script
STEP 4: Teaching the Reading Partners
STEP 5: Conducting the Weekly Progress Monitoring Protocol
STEP 6: Following the Progress review, Decision-making, and Support Protocol
1. Training Day Preparation

A. Prepare program:

Locating probes (e.g., STEEP, AIMS, DIBELS)

Deciding on graphing procedure

Locate or develop scripts (interventioncentral.org)

Develop quick assess to materials

Available copy of one packet per grade

Grade leaders or one person assignment

Scan and put on website
B. Organize the first day:

Set a daily routine.
   Time, location of materials and process for weekly assessment.

Set a date and time for 30 minute training

Set a date for a later 15 minute first practice time with teacher
C. Organize materials

Timer

A 2-pocket folder for each pair of peer tutors

Copy Training materials

*Training Day Scripts, story, Reading Partners Script, and Reading Progress charts*

Copy 15 reading passages (1 /day for 3 weeks) for each child and teacher.
2. Student Training Day Script

A. Roles

Trainer
Train students how to do their steps
LISTEN
LISTEN and SAY (stuck words)
LISTEN AND SAY AND
CIRCLE

Teacher
Model and give feedback to children

Additional Helpers (already trained peer tutors)
Assign partners (Fuchs, Fuchs, & Kazdan, 1999).

- Use graph plotting scores from highest to lowest-level readers.
- Divide the list in half.
- Partner the highest-level reader with the top student on the bottom half of the list. The next student on the top half will be partnered with the next student on the bottom half and so on.
- Adjust list to match students’ personalities and reading levels as needed.
- Usually the higher-level reader, reads first (models) first.
- Rotating high-level readers helps maintain motivation.
C. Use TRAINING STORY

😊 All animals change as they grow. They get big and strong as they change every day. A new born puppy cannot see or hear. It takes a year for a puppy to grow as big as its mother.

😊😊 Some pets need a lot of care, and some need very little care. People need to be kind to all pets. Dogs are great pets, but they need lots of care and training. Dogs are fun pets and they like to please people and like to play with small toys. It is fun to play ball with them. But they it takes time to give them food and water every day.
D. TEACH SKILLS

LISTEN

Trainer: LISTEN as your teacher reads the story out loud. LISTENing looks like this: sitting quietly, facing my paper, my eyes are on my paper, and my pencil is following the words that the teacher is reading. (MODEL.)
LISTEN and SAY

Trainer: Partner 1 will read out loud. Partner 2 will LISTEN AND SAY any word that is misread or sounds “stuck.” A misread word is a word that is skipped or read wrong. A stuck word is any word that is not read after 3 seconds. Saying any missed words will help a reader read the word faster. Listen to me as I get help from your teacher when I get stuck on a word.
LISTEN and SAY and CIRCLE

**Trainer:** Everyone will have the chance to read out loud for one minute and count how many words can be read without misreading or getting stuck. Our goal is keep reading more words each day. During the one minute reading, one partner will read. The other partner will do three things.

- **LISTEN** to your partner read,
- **SAY** misread or stuck words and
- **CIRCLE** the misread or stuck words.

Watch your teacher LISTEN+ SAY+CIRCLE as I read.
READING PARTNERS SCRIPT

STEP 1: GET READY
Take out pencil, folder, one story, and chart. Write your name on story, trade stories, and raise pencils in the air.

STEP 2: LISTEN
Follow along as the teacher reads the story.

STEP 3: PRACTICE
PARTNER 1 reads.
PARTNER 2 LISTEN AND SAY misread and stuck words until timer rings. Trade jobs.

STEP 4: 1 minute TIMED READING
PARTNER 1 reads
PARTNER 2 LISTEN and SAY and CIRCLE misread or stuck words. When timer rings, draw a line / at last word read. Trade jobs.

STEP 5: COUNT AND CHART
Count every word that is not circled. Write the score on the story page and on your chart.
4. Reading Partners Progress Chart

- Count every word that is not circled. This is your score!
- Write your score on your story page.
- Find today’s date on this page and write your score on the line.
- Put a Star on the graph to mark today’s score.
5. Weekly Progress Monitoring

A. Conduct the Progress Monitoring Protocol

Individually-administered

Materials:
- Copy of the school-wide reading passage for each child.
- School-wide screening scores
- “Treasure chest”

Administer and score a one-minute timed reading. Provide a reward if child score on the second exceeds the score obtained during screening.
Without incentive: 8 children
With incentive: 5 children
Without incentive: 12 children
With incentive: 5 children
2nd grade after 3 week intervention on Can’t Do/Won’t Do probe

Mean Score: 111.88, Median Score: 102

Assessment: 2/27/2006 - DIBELS K-6, Oral Reading Fluency, Grade 2

1 At-risk
2nd grade after week 3 intervention on cold probe (1 time)

Mean Score: 92.72, Median Score: 88

Assessment: 3/6/2006 - Reading, Class-Wide, Read Second

↑

1 At-risk
6th grade whole class intervention (week 2)

Mean Score: 124.27, Median Score: 123

Assessment: 3/13/2006 - Reading, Class-Wide, Read: Sixth

Score
Can't Do / Won't Do
Frustrational
Instructional
Mastery

10 At-risk
6th grade class after 3 week class intervention

Mean Score: 169.20, Median Score: 154.5

Assessment: 3/13/2006 - DIBELS K-6, Oral Reading Fluency, Grade 6

2 At-risk
Progress Review

Before meeting:

Review folders to ensure that intervention was used correctly for at least 4 days that week.

If this is not the case, conduct another in-class training day.

Graph weekly progress monitoring assessment data.
Decision making

- **Review data** to make decisions:

  *DATA OUTCOME 1: Class median is below frustration range and most students increasing about 2 words a week.*

  *ACTION: Consider implementing intervention for an additional week and then review progress again.*
DATA OUTCOME 2: Class median is below frustration range and most students are not increasing about 2 words a week:

ACTION: Consider implementing intervention for an additional week with incentives and then review progress again.
DATA OUTCOME 3: If the class median is above frustration range then consider:

**ACTION:** For students performing within the frustration range but increasing about 2 words a week, continue the intervention for another week.

**ACTION:** For students performing within the frustration range with less than a 2 words increase a week: Modify intervention for an individualized intervention
Weekly Support, 5-min

- Providing a graph plotting student and intervention performance.
- Reviewing student progress.
- Providing positive feedback for accurate steps.
- Discussing a rationale for any missed steps.
- Problem solving about how to correct missed steps.
- May provide a booster session.
Rationale for Support:

80% of interventions are not used without support
<table>
<thead>
<tr>
<th>Troubleshoot Intervention Support</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was the intervention developed to ensure that it required minimal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>classroom time and resources and fit within daily classroom routines?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are materials readily available to the teacher?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was a step-by-step “coach card” provided?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was the teacher shown how to implement the intervention by a “coach”?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did the coach observe implementation of the intervention to ensure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>that the teacher could use the intervention correctly and had all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>needed materials?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was weekly follow-up support provided to the teacher after initial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>training?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are integrity data graphed to show used correctly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is an administrator involved?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Self-monitoring Checklist

- 1. Observe the teacher using the steps with intervention script
- 2. Check off steps used
- 3. Prompt the teacher to do any missed step
- 4. Problem Solve any noted “blockers”
- 5. Continue until accurately implemented without prompts

Number of consultation steps completed: 
_____/ 5 = ______% of the steps correctly used
Typical Effects of Class-wide Intervention in Reading
Class 1 at Screening

Teacher: [Blank]  Grade 1
Mean Score: 36.42, Median Score: 18

Assessment: 2/22/2006 - Reading, Class-Wide, Read First

Score  Can't Do / Won't Do

- Frustrational
- Instructional
- Mastery

Students
Class 1: Following 10 Days Intervention

Teacher: Grade 1
Mean Score: 55.61, Median Score: 52

Assessment: 4/18/2006 - Reading, Class-Wide, Read First

Scores:
- 7, 10, 19, 20, 28, 34, 36, 39, 52, 52, 57, 60, 77, 79, 81, 104, 117, 129

Categories:
- Score
- Can't Do / Won't Do
- Frustrational
- Instructional
- Mastery

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Class 1: Following 15 Days Intervention

Teacher: Grade 1
Mean Score: 59.17, Median Score: 66.5

Assessment: 4/26/2006 - Reading, Class-Wide, Read First

Scores:
- Frustrational
- Instructional
- Mastery

Students
Class 2 at Screening

Teacher: Grade 1
Mean Score: 34.41, Median Score: 26
Assessment: 2/22/2006 - Reading, Class-Wide, Read First

Score
Can’t Do / Won’t Do
Frustrational
Instructional
Mastery

Students
Class 2: Following 5 Days Intervention

Teacher: [Teacher Name]  Grade 1
Mean Score: 59.93, Median Score: 65
Assessment: 5/3/2006 - Reading, Class-Wide, Read First

Score
Can't Do/Won't Do
Frustrational
Instructional
Mastery

<table>
<thead>
<tr>
<th>Students</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
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<tr>
<td>27</td>
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<tr>
<td>88</td>
<td>88</td>
</tr>
<tr>
<td>91</td>
<td></td>
</tr>
</tbody>
</table>
Class 2: Following 10 days Intervention

Teacher: Grade 1
Mean Score: 65.81, Median Score: 71
Assessment: 5/10/2006 - Reading, Class-Wide, Read First

Score
Can't Do / Won't Do
Frustrational
Instructional
Mastery

Students
Class 3 at Screening

Teacher: Grade 1
Mean Score: 36.88, Median Score: 31

Assessment: 2/22/2006 - Reading, Class-Wide, Read First

Score
Can't Do / Won't Do

Frustrational
Instructional
Mastery
Class 3: Following 5 days Intervention

Teacher: [Teacher Name]  Grade 1
Mean Score: 62.63, Median Score: 79
Assessment: 4/26/2006 - Reading, Class-Wide, Read First

Score: Can't Do / Won't Do
- Frustrational
- Instructional
- Mastery

Students:
- [Scores for each student]
Following 10 Days Intervention

Assessment: 5/9/2006 - Reading, Class-Wide, Read First

Teacher: Grade 1
Mean Score: 67.93, Median Score: 86

Scores:
- Mastery: 103
- Instructional: 88, 88, 86, 84, 47
- Frustrational: 17, 16, 8, 7, 9
- Can't Do/Won't Do: 100, 98, 91

Students
How-To Classwide Math
Intervention Plan- 15 Min per Day

- Protocol-based classwide peer tutoring, planned integrity checks
- Model, Guide Practice, Independent Timed Practice with delayed error correction
- Group performance contingency
- Teachers encouraged to
  - Scan papers for high error rates
  - Do 5-min re-teach for those with high-error rates
  - Provide applied practice using mastery-level computational skill
• Usually the higher-performing student, goes (models) first.
• Rotating high performers helps maintain motivation
Materials Needed

- Computer and software to organize data
- Student data imported. Clerical person to enter data on-site for tier 1 screen only.
- Color printer to print graphs + extra color cartridges
- Probe materials, digital count-down timers
- Intervention protocols, intervention materials (e.g., flashcard sets, reading materials)
- Access to copier and some assistance with copying
- Reinforcers for treasure chest (no more than $500 per school)
Classwide Intervention: Teaching Math Facts   (Use with Flashcards)

This intervention is designed to **build math fact fluency and increase accuracy** and can be used for addition, subtraction, multiplication, or division facts.

**Teacher Coach Card**  (conduct these steps every day):

- Instruct students to find their math partner and get out flashcards quickly and quietly.

**GUIDED PEER PRACTICE**

  - Set timer for 3 minutes and tell students, “Begin practicing.”
  - When timer rings, tell students, “Stop. Switch flashcards.”
  - Set timer for 3 minutes and tell students, “Begin practicing.”
  - When timer rings, tell students, “Stop practicing.”

**TIMED INDEPENDENT PRACTICE**

  - Pass out worksheets face-down on students’ desks. Tell students, “Write your name on the back of your paper. Don’t turn them over until I tell you to.”
  - Set timer for 2 minutes. Say, “On your mark, get set.” Begin the timer, and say, “Go.”
  - When the timer rings, tell students, “Hold your papers up in the air so that I can see that you are no longer working.”
  - Tell students, “Trade papers with your math partner for scoring. When I call out the answers, mark the answers ‘right’ or ‘wrong’.”

**ERROR CORRECTION**

  - Call out the correct answers. Review answers that several students miss.
  - Tell students, “Give papers back to their owners now. If you missed problems, write the correct answer under the problem where your partner wrote it.”
  - Tell students, “Write your score on your progress chart and pass your papers to the front so I can pick them up.”

**REWARD/MOTIVATION**

  - Shuffle the papers. **Randomly draw a paper from the stack.** If the score on this randomly selected paper is higher than the randomly selected score from the day before (or the class median if you have calculated it), then deliver a classwide reward (e.g., 5 minutes free time).

Teachers: Every Friday, record each student’s score on the Daily Intervention datasheet in the “intervention” column.
Classwide Math Intervention: Moving Beyond Basic Facts  (Use with Practice Sets)

Distribute the correct worksheet to students and tell students to get into their working pairs.

Instruct students to write their names and the date on math sheet.

GUIDED PEER PRACTICE

Students should complete the first row (or as many as possible in 3 minutes) of the worksheet with help from their math buddy.

Tell students to switch roles. Now, the other student should complete the second row of problems (or as many as possible in 3 minutes) with help from their math buddy.

***The goal is for students to work as quickly as possible completing as many problems as possible in the short amount of time with 100% accuracy. If one student is stronger than another, then you will have to monitor to make sure that the stronger student does not simply supply the answer but explains how to get the answer when that student is acting as the “coach” or “tutor.”

INDEPENDENT TIMED PRACTICE

Set timer for 2 minutes.

Work problems below the practice line for 2 minutes.

When timer rings, tell students to stop working.

ERROR CORRECTION

Have students trade papers and score.

Provide a mini-lesson/review when the same kind of error is made by many students.

Have students count the number of digits correct at the top of the page.

Write the correct answer for the problems you missed.

REWARD/MOTIVATION

Shuffle the papers. Randomly draw a paper from the stack. If the score on this randomly selected paper is higher than the randomly selected score from the day before (or the class median if you have calculated it), then deliver a classwide reward (e.g., 5 minutes free time).

Teachers: Each Friday, record student's score on the Daily Intervention Datasheet in the “Intervention Column.”  

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Kindergarten, 1st Semester

1. Fluently count in sequence
2. Fluently count forward and backward from a fixed position between 1 and 20
3. Count object sets and identify the corresponding amount 0-20
4. Fluent number naming 0-20
5. Identify object set with larger size
6. Arrange object sets by size
7. Put numbers in order 1-20
8. Fill in the missing number 1-20
9. Combine object sets to reach sums to 20 using manipulatives.
10. Remove objects from set to identify remaining amount 0-10.
11. Add and subtract 1 from or to numbers 1-5 using numbers.
12. Write numbers 1-20
13. Verbally add 1 to numbers 0-19
Kindergarten, 2nd Semester

1. Verbally take 1 away from numbers 1-20
2. Count aloud by 5’s
3. Count aloud by 10’s
4. Pattern completion (strings of 1, 2, and 3 objects, numbers, letters) using repetition patterns. Complete end string and middle string.
5. Compose and Decompose numbers to 10
6. Add 1 to numbers 0-20 with written response
7. Take away 1 from numbers 1-20 with written response
8. Identify the number of 10’s in 10, 20, 30, 40, 50, 60, 70, 80, 90. Explain and check with counters.
9. Identify the number of ones in 1- and 2-digit numbers ranging from 1-99.
10. Measure and estimate distances, volumes, quantities, and sizes. Make ordinal and cardinal distinctions. Change to make equivalent.
First Grade

1. Sums to 6
2. Sums to 12
3. Subtraction 0-5
4. Sums to 20
5. Subtraction 0-9
6. Fact families add/sub 0-9
7. Subtraction 0-12
8. Subtraction 0-15
9. Subtraction 0-20
10. Fact families add/sub 0-20
1. Addition facts to 20
2. Subtraction facts 0-9
3. Subtraction facts 0-12
4. Subtraction facts 0-15
5. Subtraction facts 0-20
6. Mixed addition/subtraction 0-20
7. Fact families add/sub 0-20
8. 2-digit addition without regrouping
9. 2-digit addition with regrouping
10. 2-digit subtraction without regrouping
11. 2-digit subtraction with regrouping
12. 3-digit addition without and with regrouping
13. 3-digit subtraction without and with regrouping
Third Grade

1. addition and subtraction facts 0-20
2. fact families addition and subtraction 0-20
3. 3-digit addition without and with regrouping
4. 3-digit subtraction without and with regrouping
5. 3-digit addition and subtraction with and without regrouping
6. multiplication facts 0-9
7. multiplication facts 5-9
8. division facts 0-9
9. fact families multiplication and division 0-9
10. multiplication facts 0-12
11. division facts 0-12
12. fact families multiplication/division 0-12
13. single digit multiplied by double/triple digit without regrouping
14. single digit multiplied by double/triple digit with regrouping
15. single digit divided into double/triple digit without remainders
16. add and subtract decimals to the hundredths
### Fourth Grade

1. mixed addition/subtraction 0-20  
2. fact families add/sub 0-20  
3. 3-digit add/sub with & without regrouping  
4. multiplication facts 0-12  
5. division facts 0-12  
6. fact families multiplication/division 0-12  
7. single digit multiplied by double digit with and without regrouping  
8. double digit multiplied by double digit without regrouping  
9. double digit multiplied by double digit with regrouping  
10. single digit divisor into double digit dividend without remainders  
11. single digit divisor into double digit dividend with remainders  
12. single and double digit divisor into single and double digit dividend with remainders  
13. place fraction quantities on a number line  
14. add/subtract fractions with like denominators, no regrouping  
15. add and subtract decimals to the hundredths

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1. multiplication facts 0-12
2. division facts 0-12
3. fact families multiplication/division 0-12
4. multiply 2- and 3-digit with and without regrouping
5. single digit divisor divided into double-digit dividend with remainders
6. single digit divisor divided into double- and triple-digit dividend with remainders
7. find least common denominator
8. reduce fractions to simplest form
9. convert proper to improper fractions
10. convert improper fractions to mixed numbers
11. add/subtract proper fractions/mixed numbers with unlike denominators with regrouping
12. Double-digit divisor into 4-digit dividend
13. multiply and divide proper and improper fractions
Sixth Grade

1. Mixed basic facts or mixed operations with whole numbers
2. Find least common denominator
3. Reduce fractions to simplest form
4. Addition & subtraction of fractions w/ unlike denominators
5. Addition & subtraction of mixed numbers
6. Multiplication & division of fractions
7. Convert proper to improper fractions
8. Multiplication & division of mixed numbers
9. Mixed fraction operations
10. Add and Subtract decimals
11. Multiply and Divide decimals
12. Double digit multiplication w/ decimals
13. Substitution of whole numbers to solve equations
14. Substitution of fractions to solve equations
Seventh Grade

1. Mixed basic facts or mixed operations with whole numbers
2. Addition & subtraction of fractions w/ unlike denominators
3. Multiplication & division of fractions
4. Addition & subtractions of mixed numbers
5. Multiplication & division of mixed numbers
6. Mixed fraction operations
7. Addition & subtraction of integers
8. Multiplication & division of integers
9. Mixed (add, sub, mult, divide) integers
10. Proportional equations of a percentage & written equations including the statement “of” (e.g., 5% of 100 = _____)
11. Order of operations
12. Inverse operations (add, sub)
13. Inverse operations (mult, div)
14. Quantity conversions using fractions
15. Quantity conversions using decimals
1. Mixed basic facts or mixed operations with whole numbers
2. Mixed fraction operations
3. Add, subtract, multiply, & divide integers of varied sign
4. Solve one-step equations w/rational numbers as coefficient or as solution
5. Solve an algebraic proportion (some non-integer answers)
6. Calculate the missing value in a percentage problem
7. Solve two-step equations
Intervention Plan

• Monitor mastery of targeted skills each week

• Class Median reaches mastery range for skill, next skill is introduced

• Use periodic screening to verify reduced risk overall
Instructional Criteria

• **MATH**
  
  • **K:**
    • 0-7 Count Objects, Circle Number
    • 0-5 Count Objects, Write Number
    • 0-4 Identify Number, Draw Circles
    • 0-5 Rapid Discrimination (sorting)
  
  • **Grades 1-3**
    • 0-19 dc/2 min Frustration
    • 20-39 dc/2 min Instructional
    • 40+ dc/2 min Mastery
  
  • **Grades 4-6**
    • 0-39 dc/2 min Frustration
    • 40-79 dc/2 min Instructional
    • 80+ dc/2 min Mastery
Class-wide Math Intervention
Decision making

- **Review data** to make decisions:

**DATA OUTCOME 1**: Class median is below mastery range and most students gaining digits correct per week.

**ACTION**: Consider implementing intervention for an additional week and then review progress again.
Decision making

**DATA OUTCOME 2**: Class median is below mastery range and most students are not gaining digits correct per week:

**ACTION**: Check Integrity first and address with training if needed. Consider implementing intervention for an additional week with incentives or easier task and then review progress again.
DATA OUTCOME 3: If the class median is above mastery range then consider:

**ACTION:** Increasing task difficulty and continuing classwide intervention.

**ACTION:** For students performing 1 SD below the class mean, consider Tier 3.
Manage Implementation

- Most interventions are not managed well
- What does it mean to manage an intervention?
Where system problems are detected, deploy system interventions and:
Verify Rapid Growth in all Classes
Look for Lagging Classes—and Respond
Use follow-up screening to verify effects
Results
Tier 1 Screening Indicates Class-wide Problem

Grade: 4    Mean: 38.6    Median: 37
Assessment info: 8/26/2003, Multiplication, Multiplication facts: 0 to 9
Pre-post changes to performance detected by CBM

4th Grade Math
Multiplication 0-9

Instructional range
Frustrational range
Fourth Grade

Fourth Grade Multiplication 0-9

Digits Correct Two Minutes

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Gains within Multiple Baseline (shown as pre-post data)
• Effects on year-end scores significant at fourth grade. Effects strongest for students who were lowest performing on the prior year’s test score.

• CBMS showed strong effects, both grades.

• Integrity varied by class and variations explained effects
Overall

Probability of Failing Year-End Test Mathematics

- Overall: 23%
- Treatment: 17%
- Control: 31%

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For Vulnerable Students

Probability of Failing Year-End Test Mathematics For Children Receiving Free/Reduced Lunch

- Overall: 23%
- Treatment: 16%
- Control: 34%

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For Vulnerable Students

Probability of Failing Year-End Test Mathematics
For Children Receiving Special Education

- Overall: 44%
- Treatment: 29%
- Control: 59%

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Class-wide Intervention Works!

<table>
<thead>
<tr>
<th>Category</th>
<th>Absolute Risk Reduction</th>
<th>Number Needed to Treat</th>
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<tbody>
<tr>
<td>All Students</td>
<td>15%</td>
<td>7</td>
</tr>
<tr>
<td>Students receiving F/R Lunch</td>
<td>18%</td>
<td>6</td>
</tr>
<tr>
<td>Students receiving Special Education Services</td>
<td>39%</td>
<td>3</td>
</tr>
<tr>
<td>Low-Performing Students</td>
<td>44%</td>
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</tbody>
</table>

Source: VanDerHeyden, McLaughlin, Algina, & Snyder, 2012; VanDerHeyden & Codding, in submission

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Tier 2 Assessment

- Evaluate effects of
  - Incentives on performance (can’t do/won’t do assessment)
  - Brief instructional trials on performance
  - Follow skill hierarchy to find the break-down
- GOAL- identify intervention that will improve performance and can be delivered efficiently (e.g., small groups)
A More Powerful Way to Define Intervention Intensity

**Acquisition**
- Child response is inaccurate

**Fluency**
- Child response is accurate but slow
  - Salient cues, frequent & high-level prompting, immediate feedback, more elaborate feedback, sufficient exemplars of correct/incorrect, controlled task presentation.
  - Intervals of practice, opportunities to respond, delayed feedback, ensure reinforcement for more fluent performance.

**Generalization**
- Child response is fluent
  - Cues to generalize, corrective feedback for application and problem-solving, systematic task variation, fading of support.
Tier 2 Intervention

- Identify instructional-level task
  - Develop logical hierarchy (VanDerHeyden, 2005)
  - Identify difficulty level for which child responding is accurate most of the time

- Emphasize multiple opportunities to respond
  - Use response cards
  - Use choral responding

- Provide Immediate Corrective Feedback

- Provide rewards for skill gains each session
Count Objects- Write Number

- Two forms available. Easier form has answers from 1-10. More challenging form has answers from 1-20.
- Classwide or Individual Administration
- 1 minute
- Scored as correctly written numbers per minute

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Count Objects- Write Number
Tier 2 Assessment

- Evaluate effects of
  - Incentives on performance (can’t do/won’t do assessment)
  - Brief instructional trials on performance
  - Follow skill hierarchy to find the break-down
- GOAL- identify intervention that will improve performance and can be delivered efficiently (e.g., small groups)
Tier 2 Intervention

• Identify instructional-level task
  • Develop logical hierarchy (VanDerHeyden, 2005)
  • Identify difficulty level for which child responding is accurate most of the time

• Emphasize multiple opportunities to respond
  • Use response cards
  • Use choral responding

• Provide Immediate Corrective Feedback
• Provide rewards for skill gains each session
Response Card Intervention
At Risk

Not at Risk

intervention

screening

incentives

Correctly circled numbers per minute

Destiny

Kayla

Class Mean

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Tier 2 Interventions

• **Acquisition Interventions**
  - Designed to establish correct responding
  - Cover, copy, compare; modeling; immediate corrective feedback/guided practice; prompt hierarchies; Incremental Rehearsal

• **Instructional Skill Interventions**
  - Designed to build fluency
  - Timed trials with reinforcement; goal setting; rapid advancement of task content; delayed feedback/error correction; Task interspersal

• **Mastery Level Interventions**
  - Designed to teach generalization
  - Guided practice applying learned skill; variation of materials during intervention
Intervention Continuum

Acquisition

Guided Practice  Cover, Copy  Compare  Bingo  Incremental Rehearsal  Timed Trials  Response Cards  Task Interspersal

Fluency-Building

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Ask

- What are our system goals?
- What data are we collecting to reflect progress?
- How are we responding to lack of progress (how often, what resources)?
- How do data inform professional development decisions, text/material/resource adoptions, allocation of instructional time?
- How do data tie into personnel evaluation?
Ask

• Are we changing the odds of success in our schools?

• What are our special targets and priorities (e.g., numeracy, high-mobility, etc.)

• Are we operating as efficiently as possible?

• Are teachers adequately supported (i.e., someone responds to data and goes in to coach and support)?

• Do our instructional leaders follow data?
Some Lessons Learned

- We often measure too much and too much of the wrong things.

- We do not begin with a plan in mind of what the most critical “big ideas” are and make these explicit for students.

- Students are not provided with adequate time to practice to mastery.

- We do not connect instructional strategies to student proficiency.
Lessons Learned

• We fail to attend to the basics
  • Adequate time, intention, systematic advancement of content based on mastery of prior content, explicit connection of computations to conceptual understandings past and future, providing sufficient demonstrations and checking for student understanding

• We de-value fluency in computational skills and bigger ideas like quantity discriminations with proportions
Lessons Learned

• We think of “application” as only word problems

• If we graph expectations for mathematical learning across years of school, it is not a linear upward trend. We expect too little at the lower grades and try to make up for lost time later on.
For More Information

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  - amandavande@gmail.com
  - 251-300-0690

- www.isteep.com

- www.rtinetwork.org

- Keeping RTI on Track: How to Identify, Repair and Prevent Mistakes That Derail Implementation


- Or 1-800-341-7874
