Implementing RtI at the Middle School
sponsored by the NYS RtI TAC

*In the middle of difficulty lies great opportunity.*

Matthew Burns
University of Missouri
Contributions to Learning – Hattie 2009

• The student $d = .40$

• The school $d = .23$

• The teacher $d = .49$

• The curriculum $d = .45$
Interventions for Children with LD

Reading comprehension 1.13
Direct instruction .84
Psycholinguistic training .39
Modality instruction .15
Diet .12
Perceptual training .08

Kavale & Forness, 2000
Special Education

• President’s Commission on Excellence in Special Education
• Reduce paperwork and increase flexibility
• Identify and intervene early
  – Service first and assessment later
• “Those that get counted, count.”
• Use special education staff more effectively
MTSS

The systematic use of assessment data to most efficiently allocate resources in order to enhance learning for all students.

Burns & VanDerHeyden, 2006
Bar charts showing the percentages of RTI implementation by subject and school level for the years 2009 and 2010. Elementary schools show higher percentages in reading and math compared to behavior. Middle schools have lower overall percentages compared to elementary schools. Secondary schools show a slight increase in reading implementation but a decrease in math and behavior.
Does your district have a formal RTI district implementation plan?

- Yes (48%)
- No (52%)
Components of MTSS

• Universal Screening
• Monitoring Student Progress
• Tiered Interventions
• Data-Based Decisions
Professional Learning Communities

• Teams of teachers
  – All of those who teach a particular grade level
  – A forum to collectively problem-solve at the school, classroom, and student level (DuFour, Eaker, DuFour, 2005)

• PLCS focus on student data and a culture of collaboration (DuFour, 2005).

• Many do not have common assessments, criteria to judge student proficiency, or a process to collaboratively analyze data (DuFour et al., 2005; Love, 2009).
<table>
<thead>
<tr>
<th>PLC Meetings:</th>
<th>Agenda</th>
</tr>
</thead>
</table>
| PLC: 1\textsuperscript{st} weekly meeting of the month (Content Focus)               | • Grade level teams and coaches with additional personnel as appropriate  
• School-site established PLC focus on various topics (e.g., math, STEM, behavior, environment, or other school topical initiatives) |
| PLC: 2\textsuperscript{nd} weekly meeting of the month RTI (Core Instruction Literacy Focus) | • Grade level teams and coaches with additional personnel as appropriate  
• Examine various formal and informal data to drive core instruction  
• Agenda will include embedded professional development on topics that address opportunities and challenges for core instruction |
| PLC: 3\textsuperscript{rd} weekly meeting of the month (Content Focus)                  | • Grade level teams and coaches with additional personnel as appropriate  
• School-site established PLC focus with schools studying varied topics |
| PLC: 4\textsuperscript{th} weekly meeting of the month RTI (Data Analysis)             | • Grade level teams and coaches with additional personnel as appropriate (data management team)  
• Analyze screening/benchmark data  
• Analyze progress monitoring data  
• Discuss, monitor and adjust tiered interventions. |
Data Management Team

- School Psychologist
- Literacy Coach
- SLOWLY remove
Four Purposes of Assessment

Program evaluation: How is the education system working for students overall?
  • State test

Screening: Which of my students are not meeting grade level expectations given Universal Instruction?
  • E.g., MAP

Diagnostic: What are the specific needs of students who struggle with reading or math?
  E.g., measures of specific skills

Monitoring Progress: What does the student’s growth look like?
  E.g., CBM
<table>
<thead>
<tr>
<th>Screener</th>
<th>MAP &lt; 25th %ile</th>
<th>MAP ≥ 25th %ile</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Reading Fluency (ORF)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORF &lt; Benchmark Goal</td>
<td>276</td>
<td>145</td>
<td>421</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>ORF ≥ Benchmark Goal</td>
<td>46</td>
<td>501</td>
<td>547</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>322</td>
<td>646</td>
<td>968</td>
</tr>
<tr>
<td>Fountas and Pinnell (F&amp;P)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F&amp;P &lt; Benchmark Goal</td>
<td>90</td>
<td>189</td>
<td>279</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>F&amp;P ≥ Benchmark Goal</td>
<td>200</td>
<td>367</td>
<td>567</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>290</td>
<td>556</td>
<td>846</td>
</tr>
</tbody>
</table>

Sensitivity = \( \frac{a}{a + c} \) = .86 for ORF and .31 for F&P,
Specificity = \( \frac{d}{b + d} \) = .78 for ORF and .66 for F&P,
Overall Correct Classification = \( \frac{a + d}{N} \) = .80 for ORF and .54 for F&P.
Fluency (actually rate)

Descriptive Data and Correlations between R-CBM and Accountability Test Scores

<table>
<thead>
<tr>
<th>Grade</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>r_{cbm}</th>
<th>r_{maze}</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd</td>
<td>3165</td>
<td>114.5</td>
<td>42.8</td>
<td></td>
<td></td>
<td></td>
<td>1462.7</td>
<td>192.5</td>
<td>.71*</td>
<td>na</td>
</tr>
<tr>
<td>5th</td>
<td>3283</td>
<td>142.8</td>
<td>44.3</td>
<td></td>
<td></td>
<td></td>
<td>1506.9</td>
<td>211.7</td>
<td>.65*</td>
<td>na</td>
</tr>
<tr>
<td>7th</td>
<td>528</td>
<td>165.7</td>
<td>41.2</td>
<td>282</td>
<td>15.6</td>
<td>3.0</td>
<td>1456.7</td>
<td>104.8</td>
<td>.60*</td>
<td>.54*</td>
</tr>
<tr>
<td>8th</td>
<td>843</td>
<td>168.6</td>
<td>39.0</td>
<td>1028</td>
<td>18.9</td>
<td>4.6</td>
<td>641.5</td>
<td>51.9</td>
<td>.51*</td>
<td>.49*</td>
</tr>
</tbody>
</table>

* p < .001

Note: MCA test was used for third, fifth, and seventh grade and BST was used for eighth grade, correlations are corrected for range restriction.

Developmental Activities

- **1st grade** – Phonemic awareness and phonics instruction
- **2nd grade** – Explicit phonics instruction, writing, and fluency
- **3rd grade** – Fluency and comprehension
- **4th grade** – Read to learn
- **Upper elementary & Middle School** – Vocabulary and comprehension
- **High school** – Comprehension and application
<table>
<thead>
<tr>
<th>Middle School Fluency to Comprehension</th>
<th>Screening/Benchmark</th>
<th>Diagnostic</th>
<th>Monitor Progress</th>
<th>Monitor Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBM-ORF &amp; MAP</td>
<td>MAP, ORF, &amp; Words Their Way</td>
<td>Weekly Instructional-level ORF</td>
<td>Every other week Grade-level ORF</td>
<td>Monthly STAR</td>
</tr>
</tbody>
</table>
Individual Screening without a Test

• Middle School
  – More than 20% absent
  – Poor behavior/conduct grade
  – Failing math
  – Failing English (Balfanz & Herzog, 2006).

• High School
  – More than 20% absent
  – Course failures
  – Credits earned
  – Grade point average (Allensworth, 2005).
Tiered Interventions
Multi-Tiered Academic Interventions (Burns, Jimerson, & Deno, 2007)

**Tier I:** Universal screening and progress monitoring with quality core curriculum: All students,

**Tier II:** Standardized interventions with small groups in general education: 15% to 20% of students at any time

**Tier III:** Individualized interventions with in-depth problem analysis in general education: 5% of students at any time
Problem Solving

• Tier I – Identify discrepancy between expectation and performance for class or individual – Is it a classwide problem?

• Tier II – Identify discrepancy for individual. Identify category of problem. Assign small group solution. What is the category of the problem?

• Tier III – Identify discrepancy for individual. Identify causal variable. Implement individual intervention. What is the causal variable?
TIER I

Classwide problem?
You’ve Got the Data – Now What?

• Data Management Team
  – Usually school psychologist and one other
  – Know data!

• PLC or Discipline Teams

• Get data to teachers within 2 to 3 days

• Lead data meeting
What is the Class Median?

• Median: the middle value in a list of numbers when the values are arranged from lowest to highest.

• Finding the class median:
  – Order student scores from the lowest to highest value.
  – The score in the middle of the list is the median.
  – If there is an even number of scores, take the average of the middle two scores.
Literacy in MS/HS

Adolescent Literacy

- Create a literacy plan
- Adopt coherent and rigorous standards
- Assess student needs
- Deliver interventions to struggling readers
- Help teachers learn literacy instruction
- Make a long term commitment

Classwide Intervention

http://kc.vanderbilt.edu/pals/
P A L S
Peer Assisted Learning Strategies

Objectives
- Increase students opportunity to read
- Includes tasks that all students can perform successfully
- Motivates students to become better readers
- Involves all students; creates opportunities for lower functioning students to assume an integral role in a valued activity
- Provides for positive and productive peer interaction

Overview

Partner Reading
1. Stronger reader reads aloud for 5 minutes
2. The weaker reader reads aloud the SAME text for 5 minutes
3. Weaker readers sequence the major events of what has been read for 1 minute

Paragraph Shrinking
1. For 5 minutes the stronger reader continues reading new text in the story, stopping after each paragraph to summarize
2. For 5 minutes the weaker reader continues with the new text, stopping after each paragraph to summarize

Set Up Procedures

<table>
<thead>
<tr>
<th>Pairs/Teams</th>
<th>Points</th>
<th>Selecting Text</th>
<th>Materials to Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair the top ranked higher performing student with the top ranked lower performing student, keep going until you have all your pairs. Students will remain with their partner the entire time.</td>
<td>Students earn points by:</td>
<td>Both members of a pair will read for the weaker reader’s book.</td>
<td>PALS rules</td>
</tr>
<tr>
<td>2. Divide the pairs into 2 teams.</td>
<td>• Reading accurately</td>
<td>Students should make no more than 10 errors per 100 words of text</td>
<td>Types of Misread errors</td>
</tr>
<tr>
<td></td>
<td>• Summarizing what they have read</td>
<td></td>
<td>Word recognition Correction Procedures</td>
</tr>
<tr>
<td></td>
<td>• Working cooperatively with their partners</td>
<td></td>
<td>Pairs and Teams Chart</td>
</tr>
<tr>
<td></td>
<td>• transitions</td>
<td></td>
<td>Score Board</td>
</tr>
</tbody>
</table>
Procedure

<table>
<thead>
<tr>
<th>Partner Reading</th>
<th>Paragraph Shrinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stronger reader reads aloud for 5 minutes</td>
<td>1. For 5 minutes the stronger read continues reading new text in the story, stopping after each paragraph to summarize</td>
</tr>
<tr>
<td>2. The weaker reader reads aloud the SAME text for 5 minutes</td>
<td>2. For 5 minutes the weaker reader continues with the new text, stopping after each paragraph to summarize</td>
</tr>
<tr>
<td>3. Weaker readers sequence the major events of what has been read for 1 minute</td>
<td></td>
</tr>
</tbody>
</table>

Minnesota Center for Reading Research
Timeline

Collect Data: Pre-test (fluency and comprehension)

- **Day 1:** Train Students on Set Up Procedures and Partner Reading, Practice Reading for 10 minutes, Error Correction
- **Day 2:** Train Students on Paragraph Shrinking, Practice Reading for 10 minutes
- **Day 3-10:** Partner Reading, Paragraph Shrinking 15 minutes every day

Collect Data: Post-test (fluency and comprehension)
**Partner Reading**

- **First Reader** reads for 5 minutes.

- **Second Reader** reads the same text for 5 minutes.

- **Second Reader** retells for 1 minute.

**RULES**

- Talk only to your partner and only talk about Partner Reading
- Keep your voice low
- Help your partner
- Try your best!
Paragraph Shrinking

• Name the most important **who** or **what**.

• Tell the **most important thing** about the who or what.

• Say the main idea in **10** words or less.
STOP. That word is ____________

What word?
______________

Good Job!

Go back and read that line again.
What we found: 3rd grade Partner Reading data

<table>
<thead>
<tr>
<th>Third Grade Benchmark</th>
<th>91 Words Read Correctly (WRC)</th>
<th>Pre Intervention Class Median (WRC)</th>
<th>Post Intervention Class Median (WRC)</th>
<th>Slope (WRC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>81</td>
<td>104</td>
<td></td>
<td>11.5</td>
</tr>
<tr>
<td>Class 2</td>
<td>87</td>
<td>115</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Student</td>
<td>WRC</td>
<td>WRC after PALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Student 1</td>
<td>48</td>
<td>92</td>
<td></td>
<td></td>
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<tr>
<td>Student 2</td>
<td>122</td>
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<td>Student 3</td>
<td>126</td>
<td>147</td>
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<tr>
<td>Student 4</td>
<td>82</td>
<td>113</td>
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<td>Student 5</td>
<td>102</td>
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<td>Student 6</td>
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<td>Student 7</td>
<td>51</td>
<td>70</td>
<td></td>
<td></td>
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<td>Student 8</td>
<td>84</td>
<td>95</td>
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<td>Student 9</td>
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<td>82</td>
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<td>Student 10</td>
<td>102</td>
<td>127</td>
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<td></td>
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<td>Student 11</td>
<td>83</td>
<td>106</td>
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<tr>
<td>Student 12</td>
<td>38</td>
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<td>Student 13</td>
<td>104</td>
<td>115</td>
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<td>Student 14</td>
<td>152</td>
<td>161</td>
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<td>Student 15</td>
<td>143</td>
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<td>Student 16</td>
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<td>Student 17</td>
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<td>Student 19</td>
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<td>Student 20</td>
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<td>Student 22</td>
<td>87</td>
<td>105</td>
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<td>Student 23</td>
<td>49</td>
<td>47</td>
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<tr>
<td>Median</td>
<td>87</td>
<td>113</td>
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<td></td>
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</table>
What we found: 3rd grade Partner Reading data

<table>
<thead>
<tr>
<th></th>
<th>Students Below Benchmark Pre Intervention</th>
<th>Students Below Benchmark Post Intervention</th>
<th>Total Students in Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third Grade Class 1</td>
<td>10</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Third Grade Class 2</td>
<td>13</td>
<td>5</td>
<td>23</td>
</tr>
</tbody>
</table>
Tier 2 Problem Analysis
Improving Adolescent Literacy: Effective Classroom and Intervention Practices
TIER II INTERVENTIONS

Category of the Deficit
IES – Adolescent Literacy

Recommendation

1. Provide explicit vocabulary instruction. [Source – 1485 KB] Strong

2. Provide direct and explicit comprehension strategy instruction. [Source – 1485 KB] Strong

3. Provide opportunities for extended discussion of text meaning and interpretation. [Source – 1485 KB] Moderate

4. Increase student motivation and engagement in literacy learning. [Source – 1485 KB] Moderate

5. Make available intensive and individualized interventions for struggling readers that can be provided by trained specialists. [Source – 1485 KB] Strong
Recommendation 5. Make available intensive individualized interventions for struggling readers that can be provided by qualified specialists

- Use reliable screening assessments to identify students with reading difficulties and follow up with formal and informal assessments to pinpoint each student's instructional needs.

- Select an intervention that provides an explicit instructional focus to meet each student's identified learning needs.

- Provide interventions where intensity matches student needs: the greater the instructional need, the more intensive the intervention. Assuming a high level of instructional quality, the intensity of interventions is related most directly to the size of instructional groups and amount of instructional time.

Kamil et al., 2008 (IES Practice Guide Adolescent Literacy)
Grade Level Team Meeting

- Is there a classwide problem?
- Who needs Tier 2?
- Did we miss anyone?
- What should we do for Tier 2?
- Should we go to Tier 3?
National Reading Panel

• Is phonemic awareness instruction effective in helping children learn to read?
• Reviewed 52 studies of PA instruction.
• Three general outcomes were explored
  – PA tasks such as phoneme manipulation,
  – spelling,
  – and reading tasks such as word reading, pseudoword reading, reading comprehension, oral text reading, reading speed, time to reach a criterion of learning, and miscues

POWERTHEKNOWLEDGE

Minnesota Center for Reading Research
National Reading Panel Results

• PA instruction demonstrated better efficacy over alternative instruction models or no instruction
• Improved PA measures (strong), reading ($d = .53$) and spelling skills
• Teaching one or two PA skills was preferable to teaching three or more
• PA instruction benefited reading comprehension (Ehri et al.).
<table>
<thead>
<tr>
<th>Reading Outcome Measure</th>
<th>N</th>
<th>Mean ES</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudowords</td>
<td>24</td>
<td>.84</td>
<td>.80</td>
<td>-.19</td>
<td>3.60</td>
</tr>
<tr>
<td>Words in Isolation</td>
<td>48</td>
<td>.92</td>
<td>.89</td>
<td>-.05</td>
<td>4.33</td>
</tr>
<tr>
<td>Contextual Reading</td>
<td>24</td>
<td>.37</td>
<td>.38</td>
<td>-.37</td>
<td>1.18</td>
</tr>
</tbody>
</table>
Assess 4 NRP Areas

• Phonemic Awareness
  – NA at secondary setting

• Phonics
  – Word attack - WJ

• Fluency
  – Oral reading fluency or Test of Silent Contextual Reading Fluency

• Vocabulary/Comprehension
  – MAP
Category of Problem MN HS

- 9-12 with approximately 1600 students
- 69.2% pass reading
- 9th-10th grade
- 28% low on MAP (~225)
- 45% Low on TOSCRF (~100)
  - 64% low on phonics (~65)
  - 36% acceptable phonics (~36)
Groups

• Randomly assigned to two groups
  – Read 180
  – Targeted (phonics – REWARDS, fluency – Read Naturally, comprehension – Read 180

• Wait list control group

• 20 minutes each day for 13 weeks in addition to reading and study skills
<table>
<thead>
<tr>
<th>Variable</th>
<th>Targeted Interventions</th>
<th>Control</th>
<th>Waitlist Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Fluency Pretest</td>
<td>90.17</td>
<td>7.65</td>
<td>89.88</td>
</tr>
<tr>
<td>Fluency Posttest</td>
<td>98.33</td>
<td>7.27</td>
<td>94.32</td>
</tr>
<tr>
<td>MAP Fall</td>
<td>206.00</td>
<td>9.25</td>
<td>211.00</td>
</tr>
<tr>
<td>Map Winter</td>
<td>217.21</td>
<td>7.56</td>
<td>212.40</td>
</tr>
</tbody>
</table>

ANOVA for fluency: $F(1, 42) = 4.98, p < .05, d = .50$

ANOVA for MAP: $F(2, 74) = 5.84, p < .05$, partial eta squared = .14.
Interventions

• Phonics – Rewards

• Fluency – Read Naturally

• Vocabulary/Comprehension
  – Read On!
  – Reading Advantage
  – Thinking Readers
Engagement

• Academic
  – credit hours completed & GPA

• Cognitive
  – Self-regulation and perceived value of learning

• Psychological
  – Sense of belonging and identification with the school
    (Appleton et al., 2006).
Measuring Cognitive and Psychological Engagement

- **Student Engagement Instrument (SEI; Appleton et al., 2006)**
  - 35-item self-report measure

- **Fredericks et al. (2011)**
  - Review of several measures of student engagement
Engagement Intervention

• Tier 1
• Smaller class sizes, extended class time through block scheduling, extended periods, advisory periods, and encouraged participation in extracurricular activities (Dynarski et al., 2008).
Engagement Intervention

• Tier 2

• Check & Connect
  (http://checkandconnect.org/)
Engagement Intervention

• Tier 3 - Cognitive
  – Setting personal goals, self-monitoring progress toward goals, and teaching specific strategies to reach personal and academic goals,

• Tier 3 - Psychological
  – Personal relationships with a caring adult or some other mentor, increased participation in group activities, social support combined with appropriately challenging academic work, and a caring and supportive environment (Christenson et al., 2008).
Tier II

- Effective – at least moderate ES
- Costs – Low as possible, cost/ES, cost effective (comes with a lot), dedicated teacher time
- Delivery
  - Group/individual (two to six considering efficiency)
  - Total students (20%)
  - Who - teacher supervision with some peer and or adult tutoring
  - Pull out – in addition to, some pull out component, 3 to 5 X/week, approximately 30 minutes (kinder – 20min tops). No less than 8 weeks.
- Grades of kids – earlier better, certainly K-2.
- Measure – fluency measure of reading at least monthly
- Materials
  - Ease – much easier if compiled, but not prerequisite
  - Availability – standardized (manual)
Secondary Setting

• 50 minute courses
  – Smaller courses (up to 12 or so)
  – Content area (e.g., Social Studies)

• 90 minute blocks
  – Within course
  – 30 minutes of strategies
Secondary Setting

- 50 minute courses
  - Smaller courses (up to 12 or so)
  - Content area (e.g., Social Studies)

- 90 minute blocks
  - Within course
  - 30 minutes of strategies

- Remedial course

- 20 to 30 minute homeroom

- Study hall
Tier II in Content Course

Social Studies RTI Class

Social Studies Intervention

Teacher

Social Studies Class

Social Studies Curriculum

Teacher
Tier II in Content Course – 1st 30 Minutes

Social Studies RTI Class

Social Studies Teacher

Interventionist
Tier II in Content Course – 2nd 30 minutes

Social Studies RTI Class

Social Studies Teacher

Interventionist
Tier III
Reading Comprehension

• Occurs when the reader develops mental representations of the text and uses them to interpret the text (Pressley & Afflerbach, 1995).

• Critically low among middle- and high-school students (RAND Reading Research Group, 2002).
Comprehension is affected by

1 & 2) Background knowledge and vocabulary

3) Correct inferences about reading

4) Word reading skill

5) Strategy use

(Cromley & Azevedo, 2007)
Meta-analyses for Interventions

Kavale & Forness, 2000

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psycholinguistic training</td>
<td>0.39</td>
</tr>
<tr>
<td>Modality instruction</td>
<td>0.15</td>
</tr>
<tr>
<td>Perceptual training</td>
<td>0.08</td>
</tr>
<tr>
<td>Auditory Sequential Memory</td>
<td>0.32</td>
</tr>
<tr>
<td>Visual Sequential Memory</td>
<td>0.27</td>
</tr>
</tbody>
</table>
Working Memory

Melby-Lervag & Hulme, 2012 – Working Memory

Verbal Ability     .13
Word Decoding      .13
Arithmetic         .07

“There was no convincing evidence of the generalization of working memory training to other skills (nonverbal and verbal ability, inhibitory processes in attention, word decoding, and arithmetic).”
## Meta-Analysis on Interventions

<table>
<thead>
<tr>
<th>Variable</th>
<th>k</th>
<th>Median Adjusted Hedge’s g</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Functioning</td>
<td>3</td>
<td>.09</td>
<td>-.50 to .68</td>
</tr>
<tr>
<td>Phonological/Phonemic Awareness</td>
<td>11</td>
<td>.44</td>
<td>.24 to .64</td>
</tr>
<tr>
<td>Verbal Memory</td>
<td>1</td>
<td>.20</td>
<td>NA</td>
</tr>
<tr>
<td>Reading Fluency</td>
<td>11</td>
<td>.43</td>
<td>.29 to .57</td>
</tr>
<tr>
<td>Attention</td>
<td>1</td>
<td>.13</td>
<td>NA</td>
</tr>
<tr>
<td>Mixed</td>
<td>5</td>
<td>.33</td>
<td>.13 to .53</td>
</tr>
</tbody>
</table>

### Assessment Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>k</th>
<th>Median Adjusted Hedge’s g</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Measures</td>
<td>8</td>
<td>.17</td>
<td>-.07 to .41</td>
</tr>
<tr>
<td>Phonological/Phonemic Awareness</td>
<td>13</td>
<td>.50</td>
<td>.34 to .66</td>
</tr>
<tr>
<td>Reading Fluency</td>
<td>11</td>
<td>.43</td>
<td>.29 to .57</td>
</tr>
</tbody>
</table>
### Instructional Hierarchy: Stages of Learning

<table>
<thead>
<tr>
<th>Learning Hierarchy</th>
<th>Acquisition</th>
<th>Proficiency</th>
<th>Generalization</th>
<th>Adaption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow and inaccurate</td>
<td>Accurate but slow</td>
<td>Can apply to novel setting</td>
<td>Can use information to solve problems</td>
<td></td>
</tr>
<tr>
<td>Modeling</td>
<td>Novel practice opportunities</td>
<td>Discrimination training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explicit instruction</td>
<td>Independent practice</td>
<td>Differentiation training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate corrective feedback</td>
<td>Timings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate feedback</td>
<td>Immediate feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intervention Ideas
Previewing (Graves et al., 1983)

1. Provide each student the text
2. Provide a synopsis
3. Ask questions about the topic
4. Describe major story elements: setting, characters, point of view (narration), and description of the plot.
5. Present the names and descriptions of main characters

About 15 minutes
Preteach Keyword (Burns et al., 2004)

- Keywords - “central to understanding the meaning of the reading passage” (Rousseau & Yung Tam, 1991, p. 201)

- Preteach with Incremental Rehearsal (Tucker, 1989)

About 7 minutes
Incremental Rehearsal

• Developed by Dr. James Tucker (1989)

• Folding in technique

• Rehearses one new item at a time

• Uses instructional level and high repetition
## Results

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th></th>
<th>Preview</th>
<th></th>
<th>Keyword</th>
<th></th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Number of Comprehension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questions Correct</td>
<td>2.95</td>
<td>1.61</td>
<td>4.42</td>
<td>2.39</td>
<td>4.89</td>
<td>1.94</td>
<td><em>F = 8.52</em></td>
</tr>
<tr>
<td>Questions correct for each</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minute of Instructional</td>
<td>NA</td>
<td>NA</td>
<td>.32</td>
<td>.17</td>
<td>.83</td>
<td>.46</td>
<td><em>t = 5.02</em></td>
</tr>
</tbody>
</table>

\[p < .025\]
## Inference

<table>
<thead>
<tr>
<th>What was Taught</th>
<th>Materials</th>
<th>How it was Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching inferential questions (Carnine et al., 2004)</td>
<td>4th grade Read Naturally passages and comprehension questions</td>
<td>Students independently read passages and answered comprehension questions with support from interventionist</td>
</tr>
<tr>
<td>Determining relationships</td>
<td></td>
<td>Interventionist discussed answers using corrective feedback on errors</td>
</tr>
<tr>
<td>Relationship stated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship not stated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generalize inference rules into reading passages</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Inference – Relationship Stated

1. Provide a rule
   – e.g. the more milk you drink, the stronger your bones

2. Provide questions for which the rule is required to find the answer
   – Chris drank one glass of milk. Jeff drank 3 glasses of milk. Who is more likely to have stronger bones?

3. Model, lead, and test stating the rule and relating the answer to the rule
Inference – Relationship Not Stated

1. Give a series of questions based on prior knowledge
   – e.g., The snow was falling as Cho walked home from school. How do you think Cho felt: a. hot, b. cold, or c. tired?

2. Model finding clues to help
   – e.g., It’s snowing, what do we know about the temperature when it snows?
Inference – Relationship Induced

• Nicole had oatmeal and a banana for breakfast and a salad for lunch. What do you think Nicole will choose for dinner, chicken and vegetables or a McDonald’s hamburger?

1. Model finding information to induce a rule
   – e.g. Nicole likes healthy foods

2. Answer the question

3. Model, lead, & test
Results
SC MS

• 87% of kids below the 10th %ile made MAP reading gains
  – 77% made gains of more than 5 RIT points
  – The average gain was 12.1 RIT points!
• 80% of the students in the 11-25th %ile made MAP reading gains.
  – 53% made gains of 5 RIT points or more
  – Average gain was 8.32 RIT points!

• 6th grade +4.5, 7th grade +5.9, 8th grade +6.5
5-Year Plan

1. Get universal screening data collected and grade level teams using it
   1. Classwide problems
   2. Plan tier 2
2. Start tier 2
   1. Plan for tier 3
   2. Train Problem-solving team
3. Start tier 3 (PST)
4. Assess the system
5. Up and running
How RTI Works in Secondary Schools: Building a Framework for Success

Holly Windram
Kerry Bollman
Sara Johnson