Considerations in Accelerating Learning Rates: Reading Interventions in 1st and 2nd Grade

The Challenge: There is no magic bullet

- The importance of early intervention
  - In general, at-risk students in K-1 who receive explicit and systematic intervention support in the areas of phonological processing can catch-up with their peers (Torgesen, Wagner, Rashotte, & Herron, 2003) and can maintain this across years (Coyne, Kameenui, Simmons & Harn, 2004; Simmons, et al., in press)

- Implementing effective interventions in schools
  - Implementing highly targeted, scientifically-based interventions requires:
    - Personnel with knowledge and expertise to provide immediate, intensive educational supports (Torgesen, 2005)
    - Implementing the supports within the context of schools (scheduling, training of personnel, treatment fidelity, progress monitoring) (Chard & Harn, in press; Al Otaiba, Schatsneider, & Silverman, 2005)

No one approach/program/method works for all students nor within each school.

The Role of Instruction for At Risk Learners

Classroom instruction is the “single best weapon against reading failure” (NRC, 1998, p. 343)

- Instruction is comprised of two components:
  - What is taught
    - Content of knowledge to be learned
      - Early reading: phonological awareness, alphabetic principle, vocabulary, comprehension, and fluency with connected text (NRP, 2000; Simmons & Kameenui, 1998)
    - How the content is designed and delivered (Engelmann & Carnine, 1991; Simmons & Kameenui, 1998)
      - How the content is organized, structured, and sequenced
      - Time and grouping structures devoted to learning
      - The explicitness of the instructional language in communicating specific skills and strategies to support, integrate and expand student learning

Considerations in Acceleration

- “Acceleration is simply a more efficient use of time” (Englemann, 1997, p. 179)

- Features to improve efficiencies:
  - Materials must match the expected goal (clarity of communication, logical skill sequencing, depth of learning on essential skills)
  - Placement by Student Performance (ensuring successful learning experiences)
  - Implementation (time, delivery, progress monitoring, fidelity)
Features of Intervention

Varying the Intensity in Implementation from Easy to Hard

- Group Size: Increases opportunities to respond, receive feedback, and enables targeting to student needs
  - While 1-1 is seen by some as ideal, it isn’t necessarily more effective than groups of 3-5 (Elbaum, Vaughn, Tinajero, & Watson-Moody, 2000)
- Resource allocation, scheduling, personnel challenges
- Instructional Delivery: explicit, systematic teacher wording; error correction; prioritized content; scaffolded support; and prioritized content (Foorman & Torgesen, 2001;Hamm, Kameenui, & Simmons, 2005)
- Programs/materials vary significantly in scope (range of skills) and depth (explicitness of delivery)
- Time: A common approach is to provide additional time; however, it isn’t necessarily just more time, but how the time is spent
  - Teaching the same skills, re-teaching—firming learning
  - Extending skills—accelerating learning
  - Simmons, et al. (in press) found that the most at risk kindergarteners made significantly more growth when provided 30 rather than 15 minutes of explicit, systematic intervention

The Effect of Intensifying Instructional Time

Joint analysis with University of Texas at Austin & UO with 1st grade students most at-risk for reading difficulties (i.e., PSF<11 or NWF<10)

- Context: Both Universities were working in schools implementing multi-tiered models of instructional supports
  - University of Oregon: Implemented tier 3 supports within a prevention framework in first grade (60 minutes of intervention)
  - University of Texas at Austin: Implemented tier 2 supports within a prevention framework in first grade (30 minutes of intervention)

Summary of Studies Completed So Far:

Year 02 (2003-2004): Examined the efficiencies of aligning instructional supports across settings (general education and supplemental) compared to similar performing students in nonaligned interventions within the same systems the year before (historical control)

- Secondary Supports: 30-minute small group intervention
  - What was taught – word reading, phonics, and fluency development
  - Design Feature Examined – alignment across instructional settings, review of essential skills, explicit instructional delivery
- Tertiary Supports: 60 minute small group intervention
  - What was taught – phonological awareness, word reading, phonics, and fluency development
  - Design Feature Examined – alignment across instructional settings, increased time, review of essential skills, explicit instructional delivery

Nature of Intervention Efforts

<table>
<thead>
<tr>
<th>Delivery Features</th>
<th>Texas</th>
<th>Oregon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>30 minutes; 5 days/wk</td>
<td>60 minutes; 5 days/wk</td>
</tr>
<tr>
<td>Group Size</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>Intervention</td>
<td>Project personnel/Master’s Student</td>
<td>Educational Assistants/School-based personnel</td>
</tr>
<tr>
<td></td>
<td>Developed in response to learner</td>
<td>Scripted lessons</td>
</tr>
<tr>
<td>Fidelity</td>
<td>Monthly Observations with Weekly Coaching</td>
<td>Monthly Observations with Monthly Coaching</td>
</tr>
</tbody>
</table>

Descriptives in the Fall Results by Location.

<table>
<thead>
<tr>
<th>Location</th>
<th>PSF (Mean/SD)</th>
<th>NWF (Mean/SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon (N=21)</td>
<td>18 / 15.17</td>
<td>4 / 3.69</td>
</tr>
<tr>
<td>Texas (N=33)</td>
<td>11 / 11.68</td>
<td>4 / 4.69</td>
</tr>
<tr>
<td>Combined (N=54)</td>
<td>14 / 13.76</td>
<td>4 / 4.23</td>
</tr>
</tbody>
</table>

Key: PSF= Phoneme Segmentation Fluency; NWF= Nonsense Word Fluency
Nature of Intervention Efforts

Typical time and percent of intervention devoted to specific content area.

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Texas (Nov. - February)</th>
<th>Oregon (February - June)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>%</td>
</tr>
<tr>
<td>Word Analysis</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>Fluency</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Comp.</td>
<td>10</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>60</td>
</tr>
</tbody>
</table>

Results of Intensity Efforts

Hierarchical regression analysis results

- ΔR² = Increase in variance explained when adding location/intensity to the model (positive values = advantage to OR/more intense)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Step 1 R²</th>
<th>ΔR²</th>
<th>F</th>
<th>p</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Attack</td>
<td>.250</td>
<td>.051</td>
<td>3.98</td>
<td>.051</td>
<td>.067</td>
</tr>
<tr>
<td>Word Iden.</td>
<td>.485</td>
<td>.057</td>
<td>6.87</td>
<td>.01</td>
<td>.111</td>
</tr>
<tr>
<td>Pass. Comp.</td>
<td>.291</td>
<td>.018</td>
<td>1.42</td>
<td>.24</td>
<td>.025</td>
</tr>
<tr>
<td>SWE</td>
<td>.314</td>
<td>.097</td>
<td>9.06</td>
<td>.004</td>
<td>.141</td>
</tr>
<tr>
<td>PDE</td>
<td>.407</td>
<td>.066</td>
<td>6.10</td>
<td>.017</td>
<td>.100</td>
</tr>
<tr>
<td>NWF</td>
<td>.022</td>
<td>.161</td>
<td>10.65</td>
<td>.002</td>
<td>.165</td>
</tr>
<tr>
<td>ORF (Win-Spr)</td>
<td>.452</td>
<td>.106</td>
<td>13.23</td>
<td>.001</td>
<td>.194</td>
</tr>
</tbody>
</table>

Interpreting eta²: Small= .00-.010; Medium= .022-.109; Large= .138 -.500

Results Across Locations

Students across both locations/intensity levels displayed significant progress on all measures across first grade

<table>
<thead>
<tr>
<th>Measure</th>
<th>OR Mean/SD Fall</th>
<th>TX Mean/SD Fall</th>
<th>OR Mean/SD Spring</th>
<th>TX Mean/SD Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Attack</td>
<td>97.08/11.87</td>
<td>87.64/9.59</td>
<td>111.08/9.19</td>
<td>101.79/11.26</td>
</tr>
<tr>
<td>Word Iden.</td>
<td>89.40/10.61</td>
<td>86.58/11.06</td>
<td>105.80/10.79</td>
<td>97.85/12.10</td>
</tr>
<tr>
<td>Pass. Comp.</td>
<td>90.95/10.68</td>
<td>84.91/9.48</td>
<td>97.24/10.11</td>
<td>90.73/10.60</td>
</tr>
<tr>
<td>SWE</td>
<td>84.81/7.58</td>
<td>81.12/7.52</td>
<td>91.81/10.90</td>
<td>81.76/11.28</td>
</tr>
<tr>
<td>PDE</td>
<td>95.43/8.78</td>
<td>88.61/6.80</td>
<td>97.86/9.63</td>
<td>88.58/9.95</td>
</tr>
<tr>
<td>NWF</td>
<td>5.33/4.32</td>
<td>4.45/4.69</td>
<td>61.96/19.95</td>
<td>45.94/15.90</td>
</tr>
<tr>
<td>ORF (Win-Spr)</td>
<td>5.00/3.19</td>
<td>5.00/3.92</td>
<td>23.57/13.67</td>
<td>14.61/8.03</td>
</tr>
</tbody>
</table>

Results of Intensity Efforts

Significant mean differences on Spring ORF by locations/intensity

- Fewer significantly low readers at the end-of-year on ORF
  - Implications for treatment resisters? (Torgeson, 2001)
### Conclusions

- **Limitations:**
  - Post-hoc analysis; not true experiment
  - Contextual differences
- **Intervention matters—strategic use of time**
  - Students across both locations made significant progress
- **Intensity matters**
  - Students receiving the more intense intervention made more progress
  - More progress noted on fluency-based measures may support future learning
  - Impact on nonresponder research
  - Impact on school-level allocation of resources

### Summary of Studies Completed So Far:

- **Year 03 (2004-2005):** Interventions for 2nd Grade
  - Intensive:
    - What was taught – word reading, phonics and fluency development
    - Design Feature Examined – temporal implementation of fluency intervention; level of implementation support
    - Results: wide variability in student response to intensive interventions

### Accelerating Learning Rates

- **Decreasing the number of students needing modified achievement standards through effective and responsive interventions**
- Students requiring third tier instructional support: Students reading less than 20 ORF at the beginning of second grade
  - Project Implemented Intervention Students
    - 17 students across 5 schools
  - School Implemented Intervention Students
    - 18 students across 4 schools
- **Nature of Instructional Program Selected to Accelerate Learning**
  - Research-based, explicit, systematic: Reading Mastery, Fast Cycle, and added Read Naturally in February to increase time reading connected text
- **Nature of Intervention Efforts**
  - Small group instruction (i.e., 1-4) based on instructional needs
  - Began November 1 and continued all year
  - Groups modified as data and instructional needs warranted

### Nature of Instructional Materials: Prioritized Content

- **Teaching less more thoroughly: focusing on essential skills**
  - Reading Mastery / Fast Cycle
    - Explicitness of Instructional Language
      - Scripted lessons, correct procedures, etc.
    - Careful design and sequence of skill introduction, practice, and review
  - Read Naturally (added late Feb or March)
    - Repeated reading procedure in passages they can read with high accuracy
    - Structured and systematic approach to building fluency in reading connected text
  - **Accelerating Students Through Program**
    - Teachers completed at least 3-4 lessons/day depending on level of RM
Matching Instructional Objectives to Student Needs

- Homogenous Grouping
  - Grouped according to skill level
- Intensified Grouping Arrangements
  - Groups of 4 or less
    - Increases opportunities to respond and feedback from teacher
- Intensified and Prioritized Time for Instruction
  - Each student received 2 – 45 minute periods per day
  - Time spent in general education (30-45 minutes a day) carefully chosen for students to benefit and be successful (i.e. vocabulary, spelling and oral comprehension exercises)
  - Expectation is that groups will not be canceled (e.g., assemblies, etc.)

Year-Long PM on ORF by Sub-Group

Implementation of Efforts: Responding to Student Performance

- Professional Development
  - Intensive trainings
  - Fidelity of implementation (monthly overt observations)
  - Coaching for increased implementation (weekly check-ins)
- Progress Monitoring
  - Formative Evaluation
    - Monthly project-collected data using NWF and ORF
    - Districts and schools also collect data twice a month
    - Increased to 2xWeek after Adding RN
  - Mastery Measurement
    - Reading Mastery has built-in checkouts to determine mastery of skills and readiness for the next skill introduction
    - Students reviewed skills when data warrant
- Responding to Student Learning
  - When Progress Monitoring Data indicated limited growth for the individual, coach reviewed checkouts and rearranged groups (lesson #, instructor) when necessary

Variability in Response to Instruction

Students Who Made the Most Progress In Response to Intensive Intervention
Conclusions

Nature of Instructional Materials
- Research-based, explicit, systematic

Matching Instructional Objectives to Student Needs
- Homogenous Grouping
- Intensified Grouping Arrangements
- Intensified and Prioritized Time for Instruction

Implementation: Responding to Student Performance
- Professional development
  - Formal fidelity and on-going coaching
- Progress monitoring and instructional modifications when data warrant
- Logistics & Scheduling—make it happen; having difficult conversations

Students at risk for reading difficulties “do not discover” what teachers leave unsaid about the complexities of word learning
(Gaskin, Ehri, Cress, Ohara, & Donnelly, 1997, p. 325)"

Struggling readers need instruction that is “more intensive, more relentless, more precisely delivered, more highly structured, and direct and more carefully monitored for procedural fidelity and effects” (Kavale, 1988, p. 335)