Effectiveness of Selected Supplemental Reading Comprehension Interventions: Impacts on a First Cohort of Fifth-Grade Students

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Presentation Overview

- Research questions
- Study design and impact estimation methods
- Teacher practices
- Impacts on student test scores
Research Questions

- What is the impact of the interventions on reading comprehension?
- How are impacts related to student characteristics, school conditions, and teacher practices?
Study Design and Impact Estimation Methods
Four Curricula Examined

- CRISS (Project CRISS)
- ReadAbout (Scholastic)
- Read for Real (Zaner-Bloser and Chapman University)
- Reading for Knowledge (Success for All Foundation)

Key features:
- Supplement the core reading curriculum
- Teach strategies for improving comprehension
- Daily lessons of roughly 30-45 minutes
Study Sample

- Targeted geographically diverse districts with Title I schools
- Study includes:
  - 10 districts
  - 89 schools in those districts
  - 4-16 schools per district
  - 268 teachers
  - 6,350 students
Random Assignment

- In each district, multiple interventions were tested

- Schools were randomly assigned to one of four curricula or to the control group

- Results of random assignment:
  - CRISS and ReadAbout – 17 schools
  - Read for Real – 16 schools
  - Reading for Knowledge – 18 schools
  - Control – 21 schools
Data Collection

- **Baseline:**
  - Student assessments: GRADE, TOSCRF
  - Teacher survey

- **Followup:**
  - Student assessments:
    - GRADE
    - ETS science comprehension
    - ETS social studies comprehension
  - School information forms
  - Student records

- Classroom observations
Impacts Estimated

- Compared student outcomes of:
  - Each treatment group to the control group
  - Combined treatment group to the control group
  - Each treatment group to other treatment groups

- Estimated impacts for overall sample and for subgroups defined by student, teacher, and school characteristics

- Estimated impacts on each student assessment and composite score
Method for Estimating Impacts

- Accounts for:
  - Within-district random assignment of schools
  - Clustering of students within schools
  - Multiple comparisons

- Includes the following covariates:
  - Student: test scores, ELL status, race/ethnicity
  - Teacher: race
  - School: urbanicity

- Weights account for missing follow-up test scores
Teacher Practices
81-91 Percent of Teachers Reported Using the Interventions

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>CRISS</td>
<td>91</td>
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<tr>
<td>ReadAbout</td>
<td>87</td>
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<tr>
<td>Read for Real</td>
<td>81</td>
</tr>
<tr>
<td>Reading for Knowledge</td>
<td>83</td>
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</tbody>
</table>
Observations Examined Teacher Practices

- Teachers observed for at least 1 day

- “Fidelity” observations
  - Conducted only in treatment group classrooms
  - Assessed teachers’ adherence to key intervention practices
  - Study team identified key practices
  - Developers reviewed for accuracy

- “Quality of instruction” observations
  - Conducted in treatment and control group classrooms
  - Allows for examination of correlation between impacts and teacher practices
  - Conducted whenever teachers used informational text
Observed Teacher Adherence to Implementation Components

<table>
<thead>
<tr>
<th>Percentage</th>
<th>CRISS</th>
<th>ReadAbout</th>
<th>Read for Real</th>
<th>Reading for Knowledge</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>78</td>
<td>71</td>
<td>61</td>
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<td>100</td>
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Scales Developed Based on “Quality of Instruction” Observation Data

- Scales based on average number of times teachers engaged in behaviors during an observation interval
- Used exploratory factor analysis to develop groupings of items
- 3 scales were created:
  - Traditional interaction (13 items)
  - Reading strategy guidance (11 items)
  - Classroom management (4 items)
Treatment/Control Differences in Teacher Practice Scales

Effect Size Units

<table>
<thead>
<tr>
<th>Treatment/Control</th>
<th>CRISS</th>
<th>ReadAbout</th>
<th>Read for Real</th>
<th>Reading for Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Interaction</td>
<td>-0.8</td>
<td>-0.6</td>
<td>-0.4</td>
<td>-0.2</td>
</tr>
<tr>
<td>Reading Strategy Guidance</td>
<td>0.2</td>
<td>0.4</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Classroom Management</td>
<td>-0.2</td>
<td>-0.4</td>
<td>-0.6</td>
<td>-0.8</td>
</tr>
</tbody>
</table>

* Statistically different at the .05 level
Impacts on Student Test Scores
Treatment and Control Groups Were Similar

- Examined 6 teacher, 7 school, and 12 student characteristics
- Groups statistically similar on 24 of 25 characteristics
- One statistically significant difference – teacher age
No Positive Impacts Overall

- No statistically significant, positive impacts on any of the three test scores
- One of 12 impacts was statistically significant (negative impact of Reading for Knowledge on science comprehension test)
- Pattern of impacts unchanged when:
  - Covariates dropped
  - Other multiple comparison adjustments were made
  - Weights accounting for missing test scores at follow up were omitted
Impacts on Test Scores

* Statistically different at the .05 level
Examination of Subgroup Impacts

- Estimated impacts for subgroups of students based on:
  - 3 student characteristics
  - 3 teacher characteristics
  - 3 school characteristics

- Negative impact of Reading for Knowledge on science comprehension test for students taught by teachers with more than 10 years experience
Treatment/Control Differences in Test Scores Correlated with Teacher Practices

- Compared students in treatment and control groups for classrooms characterized by different scores on three teacher practice scales.

- For classrooms with below-average Reading Strategy Guidance scores:
  - Students in Reading for Knowledge schools have lower composite test scores than students in control schools.

- For classrooms with below-average Classroom Management scores:
  - Students in Read for Real schools have lower composite and social studies scores than students in control schools.