Using Performance Feedback to Increase Reading Comprehension Strategy Use

Matthew K. Burns    Kathrin E. Maki    Abbey C. Karich
University of Minnesota

Melissa Coolong-Chaffin
University of Wisconsin Eau Claire
Background

- Adolescent literacy is at a critically low level (RAND, 2002).
- Literacy needs are best addressed by:
  - using data to diagnose student needs.
  - providing intensive interventions for struggling learners
- Reading comprehension strategy instruction is an effective intervention for adolescent readers (Kamil et al., 2008).
Reciprocal Teaching

- Reciprocal teaching teaches cognitive strategies to improve text comprehension (Brown & Palincsar, 1989)
  - Generating questions
  - Summarizing
  - Clarify word meanings or confusing text
  - Predicting what might appear in the following text.

- Improvements in standardized measures of comprehension with students who decoded adequately but did not read with high comprehension (Burns et al., in press; Lysynchuk, Pressley, & Vye, 1990; Sporer, Brunstein, & Kieschke, 2009).
Performance Feedback

- Instruction in reading comprehension is most effective if it develops readers’ understanding of their own cognitive processes involved in reading (National Reading Panel, 2000).

- Performance feedback: Method of providing information about processes and results to promote transfer or maintenance of skills and behaviors (Duncan & Bruwelheide, 1985).
  - Increased reading fluency (Eckert, Dunn, & Ardoin, 2006)
  - Increased reading comprehension (Schunk & Rice, 1989).
  - Increase reading fluency and comprehension of four middle-school students, but the performance feedback was based on reading fluency performance rather than comprehension (Alber-Morgan, Ramp, Anderson, & Martin, 2007).
Current Research

• Present study provides students with specific performance feedback on the use of comprehension strategies.

• Research Questions:
  • What is the effect of providing performance feedback on comprehension strategies on use of the comprehension strategies?
  • What is the effect of providing performance feedback on use of comprehension strategies on reading comprehension?
Participants

- Four 7th grade students with reading comprehension difficulties
- Nominated by two teachers in their school due to difficulties with reading comprehension.
- Scored at or below the 25th percentile on a nationally-normed test of reading comprehension.
Participants

• Chris - Hispanic male, Specific Learning Disability (SLD) in reading comprehension, speech/language disorder. Read 106 WCPM (100% accurate).

• Amy - African-American female, speech disorder. Read 173 WCPM (100% accurate).

• Tom - African-American male, SLD in reading comprehension, speech/language services. Read 106 WCPM with 100% accuracy.

• Nancy - African-American female, did not receive special education services, failing all of her classes. Read 132 WCPM with 99.25% accurate.
Setting

• Public middle school academy
  • 156 students in 5th through 8th grades
  • 97% African-American
  • 88.5% eligible for Federal free or reduced price lunch program

• All students were enrolled in English 7 with no additional remediation.

• Intervention occurred one-on-one with the interventionist at a table in an empty classroom.
Measures: Screening

- Grade-level Oral Reading Fluency (ORF) passages taken from Aimsweb (2006)
  - Used standardized procedures.
  - Three 1 minute probes and the student’s median score of the three readings was used as the student’s final ORF score.
  - 130 WCPM indicates need for intensive intervention (AIMSweb, n.d.).
Measures: Comprehension

- Seventh-grade level passages (Read Naturally, 2006).
  - Approximately 350 to 400 words in length and were non-fiction

- The passages were accompanied by nine multiple-choice comprehension questions
  - Four questions for each passage were modified from short answer to multiple-choice by keeping the exact question wording, but converting the correct answer into a multiple choice selection and adding three additional distractor choices that were written by the authors.

- The student read the passages silently and completed the comprehension questions by circling the correct answer. The data for the study were the percentage of comprehension questions correctly answered for each passage.
Measure: Interview Questions

- Researchers developed an interview protocol to assess use of comprehension strategies
  - Based on similar research in math (Buschman & National Council of Teachers of Mathematics, 2003; Van de Walle & Lovin, 2006).

- Students were orally asked 12 questions.
## Interview Questions

### Predicting

Do you ever find yourself making predictions about what you read? If so, when?

Before you started reading, did you guess what the passage was going to be about? Why did you make that guess?

### Summarizing

Throughout the reading, did you find yourself stopping and asking in the middle whether or not you understood what you just read?

Did you stop yourself at any point during the reading and sum up what you had read so far? If so, when?

Did you ask yourself what the passage was mostly about after reading?

Did you ask yourself what the important parts of the passage were before answering the questions?

Are you able to describe the most important ideas of what you just read to another person? If so, what are they?

Are you able to describe what the passage was about in one to two sentences? If so, will you describe them to me?

### Generating Questions

Did you wonder about the reasons why something happened at any point during while reading? If so, when?

Do you want to know more about anything your read? If so, what?

Did you find yourself asking “why” about anything in the story? If so, what?

### Clarifying

Is there a part of this passage that you realized seemed fuzzy so you went back and read it again? If so, what part?

Did you go back and re-read any parts of what your read to better understand? If so, what parts?
# Measures

<table>
<thead>
<tr>
<th>Not There Yet</th>
<th>Got It</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Unsatisfactory: little accomplishment</td>
<td><strong>3</strong> Proficient: Substantial Accomplishment</td>
</tr>
<tr>
<td>The task is attempted and some effort is made.</td>
<td>Could work to full accomplishment with</td>
</tr>
<tr>
<td>There may be fragments of accomplishment but</td>
<td>minimal feedback. Errors are minor, so</td>
</tr>
<tr>
<td>little or no success.</td>
<td>teacher is confident that</td>
</tr>
<tr>
<td><strong>Example) Yes/No answer</strong></td>
<td>understanding is adequate to accomplish</td>
</tr>
<tr>
<td></td>
<td>objective.</td>
</tr>
<tr>
<td></td>
<td>**Example) Explains when they used</td>
</tr>
<tr>
<td></td>
<td>strategy while reading</td>
</tr>
<tr>
<td></td>
<td>and gives context</td>
</tr>
<tr>
<td></td>
<td><strong>Example) Does all of</strong></td>
</tr>
<tr>
<td></td>
<td>the things in 3-pt category and applies it</td>
</tr>
<tr>
<td></td>
<td>to their answering of the comprehension</td>
</tr>
<tr>
<td></td>
<td>questions</td>
</tr>
</tbody>
</table>
Interventions

- Four reading comprehension strategies (Palincsar & Brown, 1984)
  - Predicting
  - Summarizing
  - Generating Questions
  - Clarifying
Procedure

- A multiple baseline across participants design.
- Participants worked one-on-one with the interventionists in a quiet room in the school attended by the participants.
- 20 sessions of 20 minutes each 4 times per week
Procedure

- **Baseline**
  - Students read a passage and answered comprehension questions.
  - Students were then asked the interview questions regarding their use of the four comprehension strategies and given a score between 4 and 16

- **Strategy Lessons**
  - Sessions 5 through 8 consisted of teaching the participants the reading comprehension strategies.
  - Scripted lessons
  - One strategy per session across the four sessions.
  - Order was randomized
  - Modeling, guided practice, and independent practice.
Intervention

- Participants began receiving performance feedback on their use of the comprehension strategies in sessions 9, 13, 16, and 19.

- Students read a passage and answered the comprehension questions individually.

- Asked the interview questions and scored on their strategy use according to the scoring rubric.

- Scores for each strategy were then shown to the participant and explained.

- Students informed of how s/he could use the strategies to earn a higher score next session and reminded of how the strategies aided in reading comprehension.
Procedure

• Two school psychology graduate students delivered the interventions. Both completed a 1-hour training regarding the procedures of the study, instruction in the comprehension strategies, and providing performance feedback.

• Treatment Fidelity
  • 20% of the intervention sessions
  • Observed with an implementation checklist
  • The number of steps observed was divided by total number of steps and multiplied by 100 in order to obtain a percentage
  • Resulted in 93% of the intervention steps being correctly implemented.

• Interobserver Agreement
  • 20% of sessions
  • Scored as agreement if within one point on rubric
  • 96% agreement
Results
# Mean Strategy Use Score by Condition

<table>
<thead>
<tr>
<th>Student</th>
<th>Baseline</th>
<th>Strategy</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>SD</td>
<td>SD</td>
</tr>
<tr>
<td>Chris</td>
<td>4.75</td>
<td>NA</td>
<td>7.54</td>
</tr>
<tr>
<td></td>
<td>.50</td>
<td>NA</td>
<td>2.11</td>
</tr>
<tr>
<td>Amy</td>
<td>4.25</td>
<td>5.00</td>
<td>7.78</td>
</tr>
<tr>
<td></td>
<td>.50</td>
<td>0.00</td>
<td>2.22</td>
</tr>
<tr>
<td>Tom</td>
<td>5.75</td>
<td>4.43</td>
<td>11.83</td>
</tr>
<tr>
<td></td>
<td>1.71</td>
<td>.52</td>
<td>4.12</td>
</tr>
<tr>
<td>Nancy</td>
<td>4.25</td>
<td>4.75</td>
<td>8.67</td>
</tr>
<tr>
<td></td>
<td>.50</td>
<td>.79</td>
<td>2.52</td>
</tr>
<tr>
<td>Total</td>
<td>4.73</td>
<td>4.68</td>
<td>8.67</td>
</tr>
<tr>
<td></td>
<td>1.06</td>
<td>.64</td>
<td>3.02</td>
</tr>
</tbody>
</table>
# Percentage of Comprehension Questions Answered Correctly

<table>
<thead>
<tr>
<th>Student</th>
<th>Baseline</th>
<th>Strategy</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student</th>
<th>Baseline Mean</th>
<th>Baseline SD</th>
<th>Strategy Mean</th>
<th>Strategy SD</th>
<th>Performance Mean</th>
<th>Performance SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chris</td>
<td>38.75%</td>
<td>19.35%</td>
<td>NA</td>
<td>NA</td>
<td>62.23%</td>
<td>22.48%</td>
</tr>
<tr>
<td>Amy</td>
<td>36.00%</td>
<td>14.31%</td>
<td>55.50%</td>
<td>28.92%</td>
<td>72.89%</td>
<td>21.07%</td>
</tr>
<tr>
<td>Tom</td>
<td>36.00%</td>
<td>19.13%</td>
<td>41.14%</td>
<td>12.63%</td>
<td>87.17%</td>
<td>17.62%</td>
</tr>
<tr>
<td>Nancy</td>
<td>33.25%</td>
<td>16.03%</td>
<td>31.50%</td>
<td>15.76%</td>
<td>74.67%</td>
<td>13.28%</td>
</tr>
<tr>
<td>Total</td>
<td>36.00%</td>
<td>15.63%</td>
<td>39.29%</td>
<td>19.21%</td>
<td>71.35%</td>
<td>21.72%</td>
</tr>
</tbody>
</table>
Discussion

• Performance feedback with comprehension strategy instruction led to more frequent use of the strategies and subsequent increased comprehension.

• Consistent with previous research that found performance feedback increased reading skills (Alber-Morgan et al., 2007; Eckert et al., 2006; Schunk & Rice, 1989).

• Unique because it provided feedback on specific strategy use and implemented an experimental design.

• Instruction in the comprehension strategy alone did not lead to substantial gains in comprehension.

• Interview questions could assess strategy use to quantify an unobservable construct, but additional psychometric research is needed.
Limitations

• The interview protocol has only limited psychometric data and additional research is needed.

• The comprehension questions were written by the researchers in addition to those provided by the Read Naturally program. The rigor of the comprehension questions is unknown.

• Grade-level text was used to assess the comprehension skills of the participants, but the validity of the supposed grade level at which the text was written was unknown and likely questionable (Ardoin et al, 2006).
Conclusion

• More research is needed regarding reading comprehension interventions for middle school students.

• Frequent comprehension difficulties are noted with adolescents (RAND, 2002).

• The interview protocol developed here could help contribute to future research and could lead to additional research questions.

• Research seems warranted.