Promoting Comprehension for Students with Severe Disabilities

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Idaho Webinar
October 19, 2011

Reading and Comprehension

- Reading requires:
  - Decoding written text
    - Can compensate for lack of skill with AT or peers
  - AND
  - Comprehending meaning
    - Hard to augment if skills are lacking

Comprehension Applies to All Levels of Literacy

- Early Literacy
  - Engagement with books and read alouds
    - Can be promoting understanding of text during these shared readings
- Beginning Readers
  - Students who can independently decode the text
    - Some students may be “word readers” with little understanding
    - Comprehension strategies are critical for these skills to be usable
Reading and Comprehension

• Most research on reading comprehension for students with significant intellectual disability focused on word recognition and picture identification (Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006)


Promoting Comprehension

• NRP recommends 6 strategies for promoting comprehension
1. Comprehension monitoring
2. Cooperative learning
3. Graphic and semantic organizers
4. Question answering*
5. Question generation
6. Summarizing

*Most research for this population done in question answering


Two Types of Text

• Narrative text
  – Purpose is to tell a story
  – Examples:
    • Novels
    • Short stories
    • Biographies

• Expository text
  – Primary purpose is to inform
  – Examples:
    • Content like science, social studies
    • News articles
Narrative Text has Story Elements

- Character
- Setting
- Problem or conflict-goal of the main character
- Plot - sequence of events
- Ending or resolution
- Main idea - what the story is about (the ‘gist’)
- Theme - encompassing concept
- Author’s point of view

Expository Text

- Some expository text (e.g., history) also has story elements (e.g., Characters, setting, plot)
- All expository text has:
  - Main idea
  - Theme
  - Information
  - Author’s point of view

Check for Understanding

- As Agnes turned onto Green Pond Rd, she was looking forward to her warm house. She might eat some cookies. After she passed the house on the corner, she saw it. Her front door was open! She gasped and felt her stomach leap. She began to run towards the door. Who was in her house? As she got close, there was her neighbor’s goat looking out the window. She laughed. Once again Speckles, the neighborhood pest, had come for a visit.
Bloom’s Taxonomy

- Comprehension involves acquiring knowledge
- Bloom’s cognitive objectives are universal and apply to all populations
- Sequential – all levels are not introduced at once
- Instruction is differentiated by:
  - Increasing text difficulty
  - Type of Questions
  - Vocabulary
  - Question format
  - Response mode

Bloom’s Taxonomy

<table>
<thead>
<tr>
<th>Bloom’s Taxonomy</th>
<th>Bloom’s Taxonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>Judge according to some standard</td>
</tr>
<tr>
<td>Synthesis</td>
<td>Combine parts into a whole</td>
</tr>
<tr>
<td>Analysis</td>
<td>Break down into parts</td>
</tr>
<tr>
<td>Application</td>
<td>Use materials in a new way or slant</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Translate, interpret, and extrapolate</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Recall, recognize, draw out facts</td>
</tr>
</tbody>
</table>

Comprehension Questions Based on Bloom’s Taxonomy

- Knowledge
- Answers are “on the page”

<table>
<thead>
<tr>
<th>Easy</th>
<th>Medium</th>
<th>More Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point to title, author . .</td>
<td>“Who is the story about?”</td>
<td>“Who else is in the story?”</td>
</tr>
<tr>
<td>Point to picture of . .</td>
<td>“What did they put in the soup?”</td>
<td>(supporting characters)</td>
</tr>
<tr>
<td>Immediate recall: “Jill went up the hill. Who went up the hill?”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bloom, Englehart, Furst, Hill, & Krathwohl, 1956

Hudson & Browder 2011
Comprehension Questions Based on Bloom's Taxonomy

**Comprehension**
Answers can be inferred from what is on page

<table>
<thead>
<tr>
<th>Easy</th>
<th>Medium</th>
<th>Most Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;What happened last?&quot;</td>
<td>&quot;Put these events in order as first, second, last.&quot;</td>
<td>&quot;Put these pictures in order to show what happened in the story (more than 3 pictures).&quot;</td>
</tr>
</tbody>
</table>

**Application**
Requires student’s own background knowledge

<table>
<thead>
<tr>
<th>Easy</th>
<th>Medium</th>
<th>Most Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;The bear is eating. Are you eating?&quot;</td>
<td>&quot;Buck loved his home. How do you feel about your home?&quot;</td>
<td>&quot;This article is about whales. Where do whales live? What else do you know about whales?&quot;</td>
</tr>
</tbody>
</table>

**Analysis**
Breaking the information into parts

<table>
<thead>
<tr>
<th>Easy</th>
<th>Medium</th>
<th>Most Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Let’s put these pictures into two columns. One column is for what Sara did in the story and the other column is for what you do.&quot;</td>
<td>&quot;Let’s make a picture diagram for what we know about each person in our story. Hunting ‘Who went hunting?’&quot;</td>
<td>&quot;When the girls laughed at Renee, how did the girls feel? How did Renee feel?&quot;</td>
</tr>
</tbody>
</table>
Comprehension Questions Based on Bloom's Taxonomy

- Synthesis
  - Combining the parts into a whole
  - Easy
    - "Show me the picture of what this story was about."
  - Medium
    - "What might be another title for this story?"
  - Most Difficult
    - "What will happen to people if they have no job?" (from a news story).

- Evaluation
  - Making a judgment according to some standard
  - Easy
    - "What did you think about this story?" (states an opinion).
  - Medium
    - "Did this really happen or is it fiction?"
  - Most Difficult
    - "Why did the author write this?" (to persuade, entertain)

Writing Objectives

- Use language from Bloom’s taxonomy

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Comprehension</th>
<th>Application</th>
<th>Analysis</th>
<th>Synthesis</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>define</td>
<td>describe</td>
<td>articulate</td>
<td>calculate</td>
<td>adapt</td>
<td>appraise</td>
</tr>
<tr>
<td>describe</td>
<td>identify</td>
<td>answer</td>
<td>compare</td>
<td>assess</td>
<td>choose</td>
</tr>
<tr>
<td>identify</td>
<td>list</td>
<td>explain</td>
<td>contrast</td>
<td>compare</td>
<td>critique</td>
</tr>
<tr>
<td>list</td>
<td>name</td>
<td>generalize</td>
<td>determine</td>
<td>evaluate</td>
<td>defend</td>
</tr>
<tr>
<td>name</td>
<td>recall</td>
<td>locate</td>
<td>correlate</td>
<td>generalize</td>
<td>interpret</td>
</tr>
<tr>
<td>recall</td>
<td>record</td>
<td>categorize</td>
<td>correlate</td>
<td>integrate</td>
<td>justify</td>
</tr>
<tr>
<td>record</td>
<td>relate</td>
<td>classify</td>
<td>discriminate</td>
<td>model</td>
<td>justify</td>
</tr>
<tr>
<td>relate</td>
<td>state</td>
<td>compare</td>
<td>differentiate</td>
<td>rearrange</td>
<td>reframe</td>
</tr>
<tr>
<td>state</td>
<td>select</td>
<td>develop</td>
<td>integrate</td>
<td>rate</td>
<td>rate</td>
</tr>
<tr>
<td>select</td>
<td></td>
<td>employ</td>
<td>formulate</td>
<td>refine</td>
<td>support</td>
</tr>
</tbody>
</table>

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Checking for Understanding

• What level of Bloom’s is each question from the story about Agnes?
  – What might Agnes have been thinking when she saw the open door?
  – Who was looking out the window of Agnes house?
  – Who opened the front door?
  – Do you have any pests in your neighborhood like Speckles? What do they do?

Teaching Comprehension

• Select and prepare texts
  o Age- and grade-level appropriate
  o Adapt novels (narrative) and academic content (expository) literature using text summaries, embedded pictures, and repeated story lines

Before reading Strategies

• Develop background knowledge
  o With activities to enrich students’ understanding of themes and concepts (e.g., movie clips, experiments, hands-on activities)
• Teach key vocabulary words and concepts
Before and After Reading Strategies

- Make predictions (be sure to review question and revise prediction if necessary)
- Book walk

Using Questions

- Questions can be:
  - Literal (e.g., pulled from the page)
  - Textually inferential (e.g., not right on the page, but can be inferred from the story alone)
  - Inferential (e.g., student must use background knowledge not contained in the text; from your head)

Question Formats

- Students who can generate answers (e.g., speak or type out response on AAC)
  - Ask the question and let student give you the answer
- Students who need options (e.g., select pictures/words on AAC)
  - Use multiple choice
  - May use 4 choice array
  - May use response board with more options for each story
Question Placement

- Questions can be placed throughout the text:
  - Before
  - During
  - After
- Promote correct responding by:
  -Posing thoughtful questions
  - Using a systematic prompting system
  - Remember, comprehension is sequential

Students with More Significant Disabilities/ Multiple Disabilities

- Build comprehension by placing objects on each page of the story
  - E.g., Alexander’s Horrible, No Good Day
    - When he got gum in his hair (use stick of gum)
- Have the student touch the object as you read the word
- Ask the question at the end of the page
  - What was in Alexander’s hair?
- Use this same object and one distractor

Careful: Be sure your questions are text dependent

- Text dependent questions
  - Who was at the window?
  - What happened first?
  - What was the name of the street where Agnes lived?
- Not text dependent
  - Is a goat an animal?
  - Which of these is a name- Agnes, goat, chair, book
Helping Students Find the Answer: Least Intrusive Prompts

• Ask the question and wait for answer
• Prompt 1: Reread a portion of the text that contains the answer
• Prompt 2: Reread the sentence with the answer
• Prompt 3: Reread the sentence and point to/say the correct answer (model)
• Prompt 4: Guide student to touch correct answer

Check for Understanding

• How would you build comprehension for students who do not yet gain meaning from text?
• What would you use for response options for students with visual impairments?
• What do you do if the student does not get the correct answer?

The “Biography” Study

5 Biographies from 6th Grade Literature Curriculum

Matthew Henson  
John Brown  
Amelia Earhart  
Harriet Tubman  
Gary Paulsen

Adaptations to Original Biographies

• Text summarized for “big ideas”  
• Length limited to 10-11 pages  
• Key words paired with picture symbols (WWS)  
• 11 comprehension questions (i.e., 8 “WH” questions and 3 sequence questions)  
• Four response options for each question  
• Organized in a notebook; cost was approximately $150.00 for 5 adapted books and response options

Student Response Options

• Four response options per question  
• Students responded expressively or receptively  
• To assess comprehension skills (and not matching), all picture symbols on the response options were also on the page  
• Response options were laminated and arranged on page protectors with velcro dots and stored in a 3-ring binder  
• For instruction, the binder was elevated on the table with a table-top easel
Student Response Options

“WH-” Questions

• “What” (e.g., What did father ask his children to do? John Brown)
• “Who” (e.g., Who asked Matthew to study? Matthew Henson)
• “Why” (e.g., Why did the dogs have to work hard? Gary Paulsen)

“WH-” Questions

• “When” (e.g., When would Harriet be sent south? Harriet Tubman)
• “Where” (e.g., Where did Amelia land her plane? Amelia Earhart)
Modified System of Least Intrusive Prompts

- **Verbal** – State “WH” question rule and general reread prompt (i.e., When you hear “why” listen for “because” while pointing to the rule on graphic organizer)
- **Model** – targeted reread and model correct response (i.e., interventionist modeled selecting the correct response option)
- **Physical** – interventionist pointed to the correct response option and prompted student to do the same (i.e., This is the answer. Now, your turn).
- **Errors** were interrupted and the next intrusive prompt was given


Rules for Answering “WH-” Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>What?</td>
<td>a thing</td>
</tr>
<tr>
<td>Why?</td>
<td>“because”</td>
</tr>
<tr>
<td>Who?</td>
<td>a name</td>
</tr>
<tr>
<td>When?</td>
<td>a time or date</td>
</tr>
<tr>
<td>Where?</td>
<td>a place</td>
</tr>
</tbody>
</table>

A rule for answering “WH-” questions was inserted into the first level prompt.


Sequence Graphic Organizer

After listening to a passage, students selected one of four response options to answer the sequence questions, “What came first?, What came next?, What came last?”, then used a graphic organizer to organize their answers.

Here's an example from Amelia Earhart - “First, the manifold was vibrating badly. When I turned on the reserve fuel tanks, the gauge was leaking. Next, I needed to land very soon. I looked for a good place. Last, I turned the plane toward Ireland. Because I had been flying in the dark, I thought I might be off-course, but Ireland was right in front of me.”

What came first?

What came next?

What came last?
Flames were coming from the engine.

I needed to land very soon.

I turned the plane toward Ireland.

Sequence Graphic Organizer


Graphed Student Data

Given accessible text, one student showed she could read far better than previously demonstrated.


Check for Understanding

• How did this system of least prompts build on the idea provided earlier?
• How could this intervention be simplified for students at an earlier literacy level?
• How could the intervention be augmented for students who are independent readers?
Promoting comprehension in general education with peers

- Hudson, Browder, & Jimenez (2011)
- Effects of peer-delivered read alouds and SLP package on listening comprehension
- 2 students with moderate intellectual disability and 1 student with moderate intellectual disability and severe physical disabilities
- 3 peers received training, 2 peers were included in study

Peer tutors

- Selected by general education teacher based on their potential to benefit from experience
- 1 peer received English as a second language
- 1 peer was described as an underachiever
- 1 peer was a student with a reading disability
- Peer with a reading disability was unable to meet training criteria

Participants

- One participant had severe motor impairments and used a response board to communicate
All students responded receptively using a response board. Each response option answered one of six comprehension questions.

Peer asks, “Is this your answer?”

Student Self-monitoring Chart

Way to go!

Select a prize.
Question template

What type/kind of [noun]___ was/were in our lesson?
Who did [action]?
Where do/did [event] take place?
What happened before/after [event]?
Why is [noun] important?
Why [auxiliary verb] the [noun + adjective]?

Questions from Arianna Bones and the Nutrition Mystery

1. Where did Arianna and Marcus go? (The Nutrition Pavilion)
2. What happened after they bought a ticket? (Got in car 10)
3. Who said food from the meat group gives you protein? (The Big Voice)
4. What kind of food gives you Vitamin A? (Vegetables)
5. Why does food from the Fruit Group help you heal? (Vitamin C)
6. Why is eating food from all the food groups important? (to be healthy)
Marcus and I both knew we needed to eat from the five food groups to grow and feel good. I wanted to know more about how these food groups worked. Marcus said we should go to the Nutrition Pavilion. The Nutrition Pavilion is like an amusement park ride. You sit in a car and it rides you around, showing how each one of the Five Food Groups keeps you healthy.

My name is Arianna. My friend Marcus and I came to Munchberg for some fun and adventure. It was lunchtime and I was hungry. I went to the Dairy Way Cafe for a meal, but I got a mystery.

Say, "Why was Arianna hungry?"

Question #1 (Inferential)
1. Say, "Why was Arianna hungry?"
2. Wait 4 sec for student to answer.
3. CORRECT - Point to the self-monitoring chart and say, "You're right! Arianna was hungry because she had not eaten since breakfast. Let's turn the page and keep reading the lesson.

Make sure student turns the page. Go to next section.

4. NO RESPONSE - Point to MORE HELP on student board and say, "Remember to ask for help when you don't know the answer and I will help you."

Go to Step 6.

5. ERROR - Point to MORE HELP on student board and say, "Remember to ask for help when you don't know the answer. Don't guess.

Point to the correct answer and say, "Why was Arianna hungry? The answer is [she had not eaten since breakfast]. Now, it's your turn. You show the answer."

Remind student to turn the page and go to next section.
First prompt

MORE HELP - 1
Say, “The answer is from your head, but there are clues in the paragraph. Listen to the paragraph again.”

My name is Arianna. My friend Marcus and I came to Munchberg for some fun and adventure. It was lunchtime and I was hungry. I went to the Dairy Way Cafe for a meal, but I got a mystery.

Repeat the question: “Why was Arianna hungry? Are you ready to answer or do you want more help?”

Correct with 1 prompt – score a “4”

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2nd, 3rd, and 4th prompts

MORE HELP - 2
Say, “Why do you feel hungry at lunch time.” Repeat the question, “Why was Arianna hungry? Are you ready to answer or do you want more help?”

Correct with 2 prompts – score a “3”

MORE HELP - 3
Say, “I feel hungry at lunch because I have not eaten any food since breakfast.” Repeat the question, “Why was Arianna hungry? Are you ready to answer or do you want more help?”

Correct with 3 prompts – score a “2”

MORE HELP - 4
Say, “Listen and I will show you.” Point to correct answer and say, “The answer is [She had not eaten since breakfast]. Now, your turn. You show the correct answer.”

Correct with 4 prompts – score a “1”

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Results

- Peer-delivered instruction was effective in promoting listening comprehension for all students
- Peers delivered SLP prompt package in general education classroom with high fidelity

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Wrap Up

- Promote comprehension of text for ALL students at ALL levels of literacy
- Use questions at different levels of complexity even for beginning students
- Build strategies for question answering by using least intrusive prompting
- Adapt for students with more significant needs by using objects to answer, simpler questions, immediate recall...but don’t end there!

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Build Deeper Understanding

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