

Investigating The Effects Of A
Visible Thinking Routine On The Reading
Comprehension Of Adolescents With
Autism Spectrum Disorders (ASD) And
Delayed Adolescent Readers

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Objectives of Our Presentation

- To share the findings of a study in which the Visible Thinking Routine *What Makes You Say That?* (WMYST) was used to enhance the reading comprehension of high-functioning readers with ASD and delayed readers.

Background

- Today, general education teachers must be adept at identifying all their students' needs and providing the best possible instruction to meet those needs.
- Despite the push toward fully inclusive classrooms, many general education teachers feel ill-prepared to teach children with ASD (Kluth & Darmody-Latham, 2003).

Theoretical Framework: Reading Difficulties

- Metacognition is essential to reading comprehension.
- High-functioning readers with ASD and delayed readers struggle to achieve metacognition, or deep thinking, and must be taught how to think in this manner.
- The ability to infer the author's message from narrative text is especially challenging for readers with ASD because they are predisposed to think on a literal level with limited ability to discern affect.

Theoretical Framework: Visible Thinking

- Visible Thinking, a thinking routine developed at Harvard University (<http://www.pz.harvard.edu>, 2014), makes thinking transparent in the classroom so that students and teachers can understand their own thinking and the thinking of others.
- When thinking is transparent, students can learn to think on a metacognitive level and teachers can develop critical thinking skills in their students (<http://www.visiblethinkingpz.org>, 2014).

Theoretical Framework: Visible Thinking

- *What Makes You Say That?* (WMYST) is a visible thinking routine that has proven successful with general education students (Senokossoff & Fine, 2013).
- This routine requires students to interpret something they are reading, explain their thinking verbally, and provide evidence to support their interpretation. A graphic organizer to write responses to the prompts of WMYST is added to this routine as a form of scaffolding (Senokossoff & Fine, 2013).
- High-functioning readers with ASD and delayed readers benefit from the visual scaffolding provided by the graphic organizer to infer the author's message from narrative text.

Our Study

- We used an A-B, single-subject design with a multiple baseline across subjects (Neuman & McCormick, 1995; Richards, Taylor, Ramasamy, & Richards, 1999) to evaluate the effects of the *What Makes You Say That?* (WMYST) routine on reading comprehension.
- The following research objectives were used to guide the study:
 - To improve reading comprehension in adolescent readers with high-functioning ASD by using the WMYST visible thinking routine and accompanying graphic organizer.
 - To improve reading comprehension in delayed adolescent readers by using the WMYST visible thinking routine and accompanying graphic organizer.

Our Study

- Initially, we administered the Qualitative Reading Inventory, 5th edition and the Gates MacGinitie Reading Test, 4th edition to the participants to determine their reading levels.
- Then, each student was taught how to use the WMYST routine with narrative text and tutored for a total of nine sessions.
- During each session, the students verbally related the events of the text they read, provided evidence for those events, and inferred the author's message.
- Next, the students recorded their oral responses on an accompanying graphic organizer.

What Makes You Say That? Graphic Organizer And Rubric

What Makes You Say That?

What's Happening?	What do I see/ know that makes me say that?
Based on what's happening and the evidence you found, what do you think the author is trying to say?	

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Student _____ Observer _____

Date _____

Rubric: What Makes You Say That?

Task	Approaches 1 point	Acceptable 2 points	Target 3 points
Provides Explanation Student is able to provide a detailed explanation of what he/she sees or reads.	Begins to build an explanation.	Provides a simple explanation.	Provides a detailed written explanation of what they see or read.
Supports Explanation with Evidence Student is able to provide multiple pieces of evidence from the picture or story.	Provides no evidence from the picture or story.	Provides some evidence in writing from the picture or the story.	Provides multiple pieces of evidence in writing from the picture or the story.
Shares Interpretation Student is able to share a clear interpretation of the picture or story.	Is unable to share his/her interpretation.	Shares a simple interpretation in writing, but is not clearly explained.	Shares a clear interpretation in writing.

Comments:

Our Study

- After every three tutoring sessions, the students completed a comprehension assessment that was closely aligned with the WMYST routine.
- We used rubrics to assess the student responses for the WMYST routine and the comprehension assessment.
- Last, we administered a post Qualitative Reading Inventory, 5th edition and another version of the Gates MacGinitie Reading Test, 4th edition to the students to find out if their reading levels and comprehension had improved.

Comprehension Assessment

Comprehension Assessment

Name _____ Date _____

Title of the Passage _____

Comprehension Questions:

1. Tell me what happened in the story.
2. What can you learn from this story?

Reading Behaviors	Scoring Descriptors + √ - 0
❖ Recalls important information.	
❖ Uses text to support statements and conclusions.	
❖ Identifies author's message, intent, and/or perspective.	

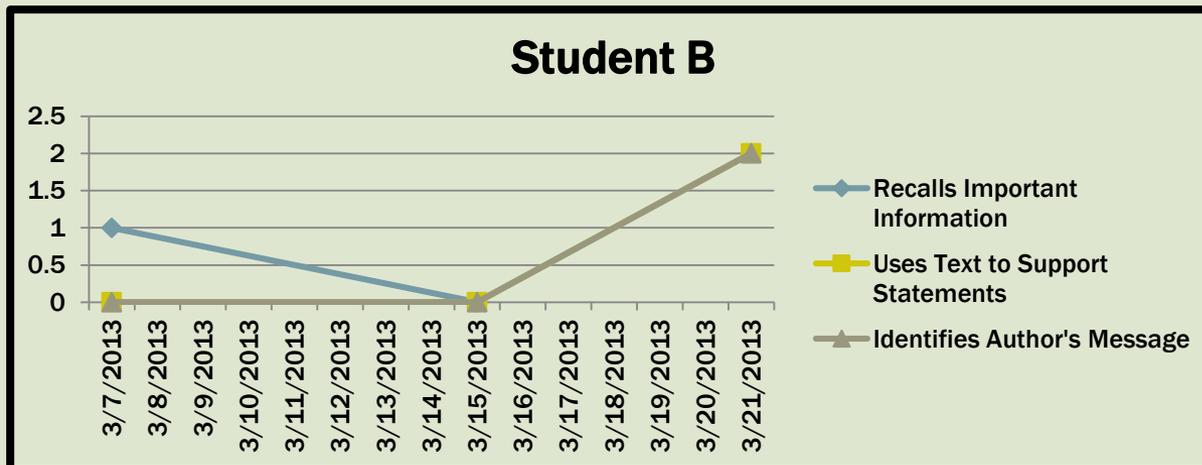
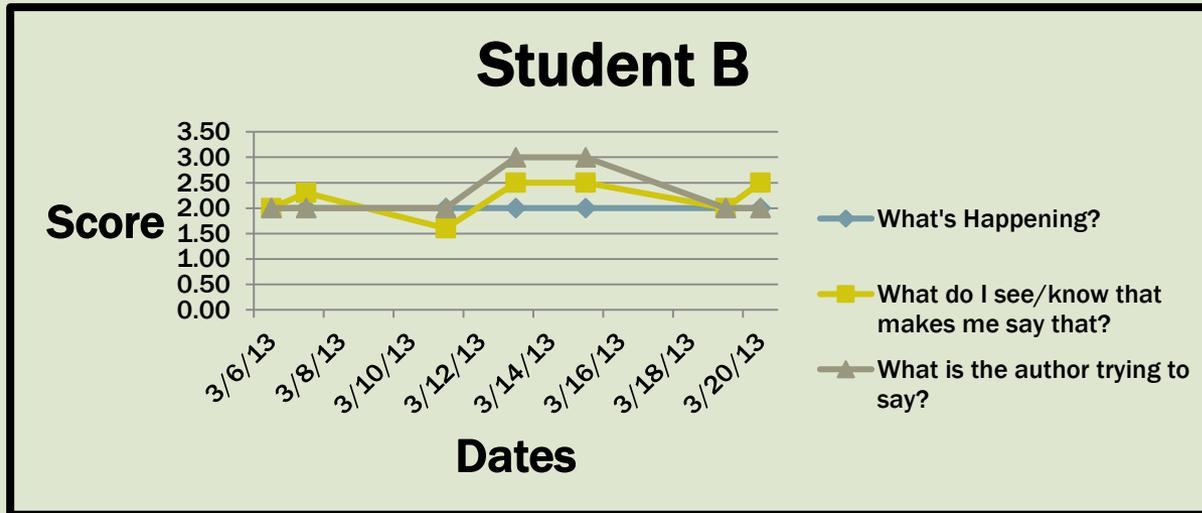
Key:

+: to great extent -: not at all
√: to some extent 0: not observed

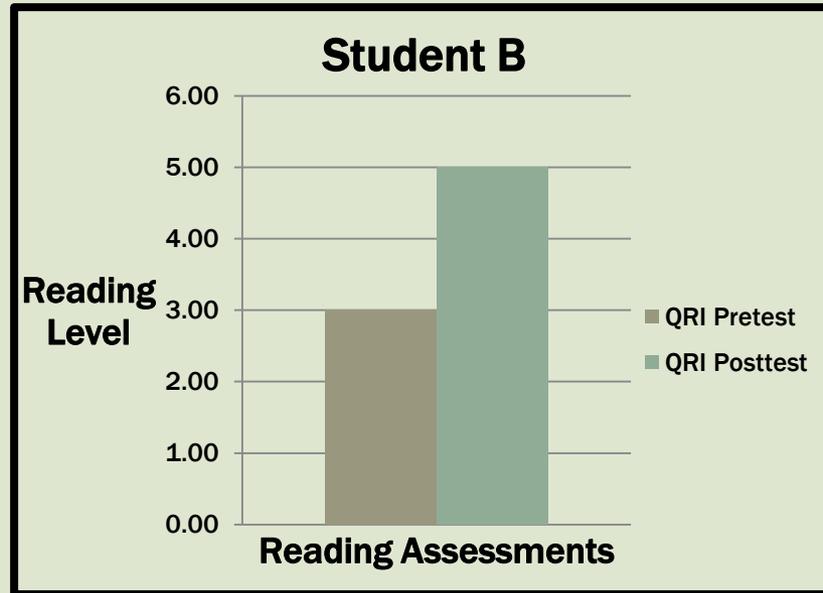
Results and Discussion

- While our results were not all positive, we believe they merit attention because they add to the sparse body of knowledge regarding reading difficulties as a function of comprehension and inferencing skills, especially for children with ASD.
- Five of the six participants did show small improvements. Participants A, B, C, and D showed improvement in identifying the author's message, based on the weekly comprehension checks.
- Participants B, C, D, and F also seemed to make gains in finding textual evidence and identifying the author's message based on the WMYST rubric, although Participants B, C, and D lost ground at the end of the study.
- Participants B and F demonstrated the most encouraging transfer of knowledge.

Results And Discussion: Participant B

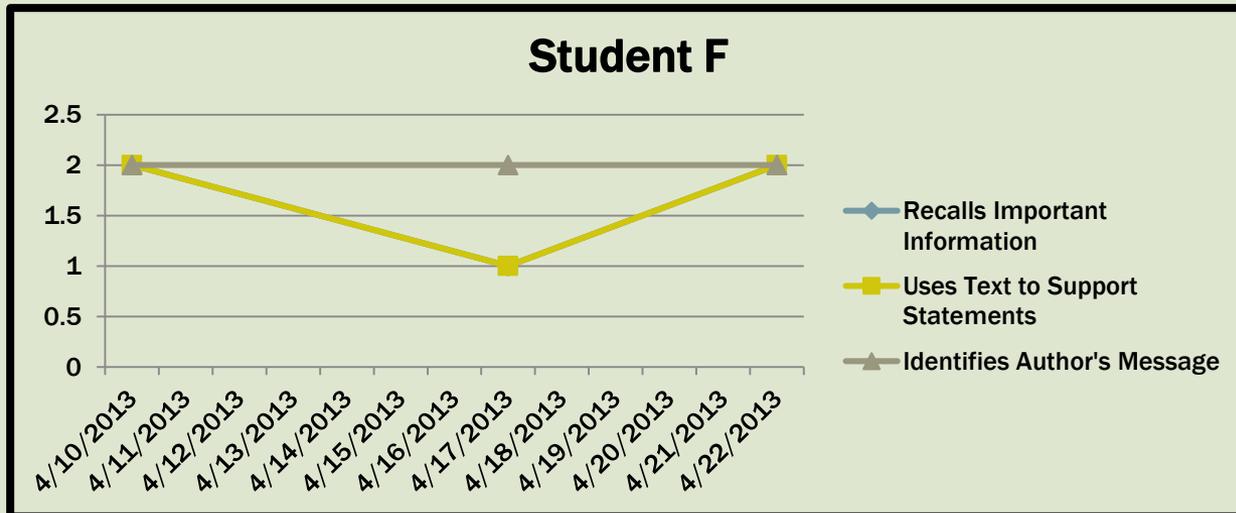
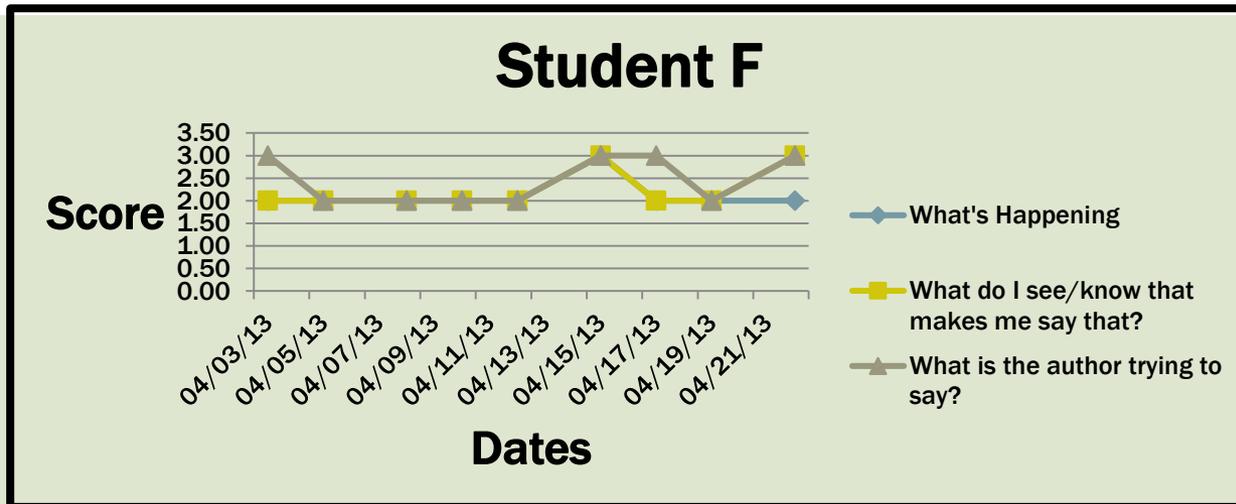


Results And Discussion: Participant B



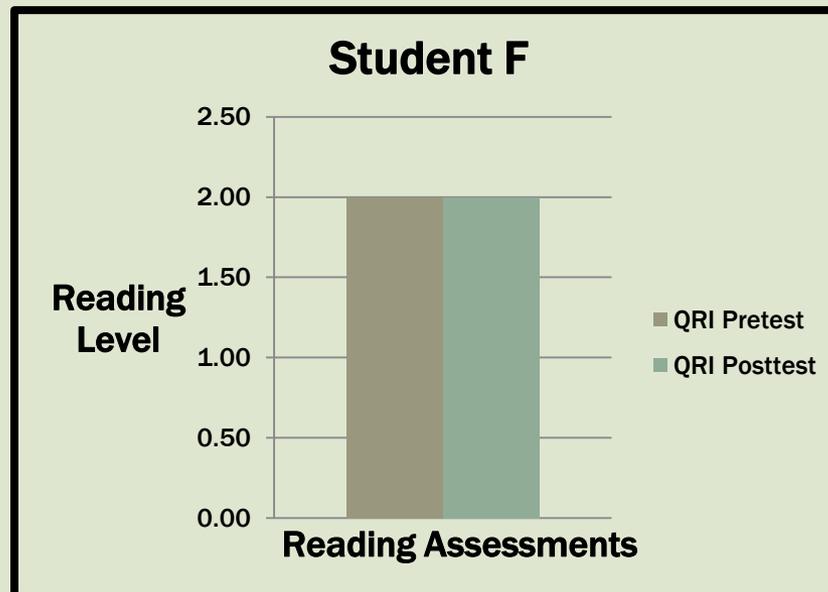
Participant B improved his overall reading level by two grade levels according to the QRI-5.

Results And Discussion: Participant F



Results And Discussion: Participant F

Participant F showed a steady increase in his ability to provide textual evidence and infer the author's message in the latter half of intervention sessions. This upward trend transferred to his comprehension checks, for which he achieved the target level of performance for all but one comprehension question about evidence, and his inferencing skills were perfect.



Limitations

- The convenience sample of participants was predetermined by the principal of the school, and it did not adequately address the study criteria for requested students.
- Two of the students had to be disqualified from the study at the outset because their performance on the pretest was too low to qualify for participation.
- In addition, there was a discrepancy between the school's assessment of participant reading levels and the investigators' assessment of the same.
 - The school's assessment was consistently one to three reading levels above that of the investigators' assessment for each participant according to the pretest.

Limitations

- Other issues beyond the control of the investigators included medical issues pertaining to one of the participants that affected his focus and performance, student absences, lack of quiet space to tutor, and circumstances that posed distractions to student performance, such as the overlap of tutoring time with snack time, school special events, and holidays.
- Due to these factors, there was insufficient time for the students to assimilate the visual thinking routine. This is especially true for special education students who generally need more time to assimilate academic concepts than general education students.

Suggestions for Future Research

- Increasing the frequency of intervention sessions – perhaps tutoring on a daily basis – and extending the length of intervention would be beneficial to allow more time for students to assimilate the visual thinking routine.
- The study of the WMYST routine with HFA readers and delayed readers can be accomplished on a larger scale if the classroom teacher implements this routine with the entire classroom.
- Alternatively, the WMYST routine can be studied in an inclusive setting in a public school.

Significance of the Study

- The Center for Disease Control (CDC) reports that 1 in 50 children are currently diagnosed with an ASD and the incidence is increasing yearly.
- Moreover, National Assessment of Educational Progress (NAEP) data and other research data estimate that one quarter of the United States population has a reading difficulty (Gunning, 2010).
- Not only are these disturbing statistics that call for powerful intervention to stem the tide of lifelong handicaps in literacy for many individuals, but the trend toward inclusive classrooms will place the burden of stemming this tide on the shoulders of the general education teacher.

Significance of the Study

- In the last two decades, many studies have addressed deficiencies in decoding and fluency, but far fewer have addressed deficiencies in reading comprehension and, specifically, drawing inferences from text (Duke & Carlisle as cited in Darmody, 2013, unpublished paper).
- Still fewer studies exist that address comprehension difficulties for children with ASD (Senokossoff, 2014, in press). Such studies are warranted and it is critical to disseminate the results to the general education classroom teacher who will need an arsenal of best practices to address the reading needs of children with ASD and delayed readers.

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