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**Topics in Autism Spectrum
Disorders and Asperger Syndrome**

*In cooperation with the University of
Wisconsin-Eau Claire*



**Reading Between the Lines:
Making Inferences**

Presented By:

Carol Westby, Ph.D., CCC-SLP

Moderated By:

Amy Hansen, M.A., CCC-SLP, Managing Editor, SpeechPathology.com

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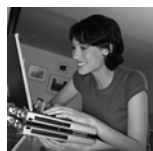
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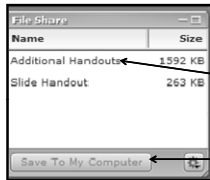


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Type question or comment
and click the send button

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Reading Between the Lines: Making Inferences

Carol Westby, PhD
Bilingual Multicultural Services
Albuquerque, NM
mocha@unm.edu

Types of Literacy

- Basic literacy: Say and define the words on the page
- Critical literacy: Interpret, analyze, synthesize, and explain texts
- Dynamic literacy: Act on the content gained from texts, interrelating the content for problem-raising and problem-solving

Morris, P.J. & Tchudi, S. (1996). *The new literacy: Moving beyond the 3Rs*. San Francisco: Jossey-Bass.

NAEP Grade 4 Questions for Hungry Spider and Turtle

- When turtle remains quiet about his mistreatment by Spider, the author wants you to:
 - believe turtle is afraid
 - have sympathy for turtle
 - feel dislike for turtle
 - think turtle deserved no dinner
- Spider's behavior during the first part of the story is most like that of:
 - mothers protecting their children
 - thieves robbing banks
 - runners losing races
 - people not sharing their wealth



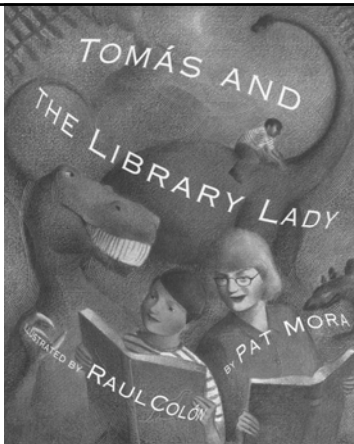
Comprehension Requires That

Readers build a mental model or representation of the situation or world (real or imaginary) described in the text.

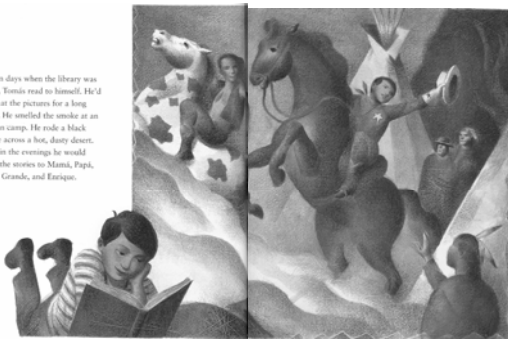


Perfetti, C., (1997). Sentences, individual differences, and multiple texts: Three issues in text comprehension. *Discourse Processes*, 23, 337-355.

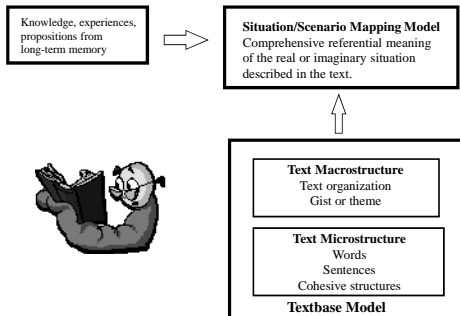
Tomas Rivera
Chancellor of the
University of California
at Riverside

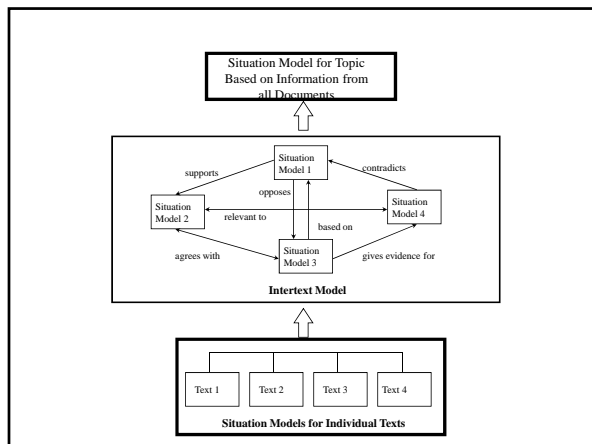


On days when the library was
busy, Tomás read to himself. He'd
look at the pictures for a long
time. He smelled the smoke at an
Indian camp. He rode a black
horse across a hot, dusty desert.
And in the evenings he would
read the stories to Mamá, Papá,
Papá Grande, and Enrique.



Mental Modeling for Individual Texts






Areas of Weakness in Poor Comprehenders

- Do not build mental models: Less skilled at integrating information from different parts of text & making relevant inferences
 - **Poor at using linguistic devices that signal cohesion**
- Poorer working memory efficiency
- Poorer metacognitive skills
 - **Do not notice inconsistencies in text**
 - **Do not recognize when they do not comprehend**
 - **Do not know how to remedy comprehension failure**

What is an Inference?

The inference equation:
text/picture + previous knowledge = inference



+

Knowledge
 • Dinosaurs are dead
 • Smoking can kill

=

dinosaurs died
 because they smoked

The real reason dinosaurs became extinct

An inference is the information gained from the picture and or text combined with our prior knowledge

Comprehension: Literal & Inferential

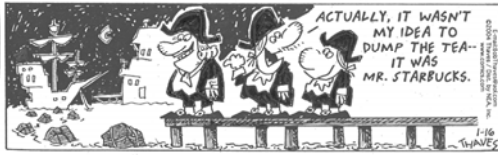
Knowledge
Batman & Robin help
people who are in
trouble



Batman has
interpreted the sign
literally – that
someone is in trouble
and needs help

We infer that the "Help
Wanted" is an
employment
advertisement

Frank & Ernest



WHAT GOOD READERS DO WHEN THEY : INFERENCE

Draw
conclusions
from facts
presented in
texts

Connect what
is happening
in the text to
their own
knowledge of
the world

Recognize the
connection
between
nouns &
pronouns

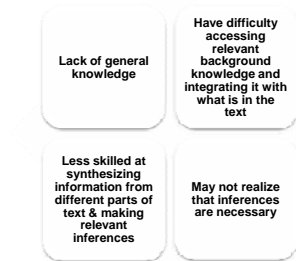
Understand
characters'
relationship to
one another

Figure out the
meaning of
unknown
words from
context cues

Identify
characters'
personalities,
and
motivations

Provide
explanations
for events
presented in
the text

REASONS FOR INFERRING DIFFICULTIES



Oakhill, J. & Yuill, N. (1996). Higher order factors in comprehension disability: Processes and remediation. In C. Cornoldi & J. Oakhill (Eds.), *Reading comprehension difficulties: Processes and intervention*. (pp. 69-92). Mahwah, NJ: Erlbaum

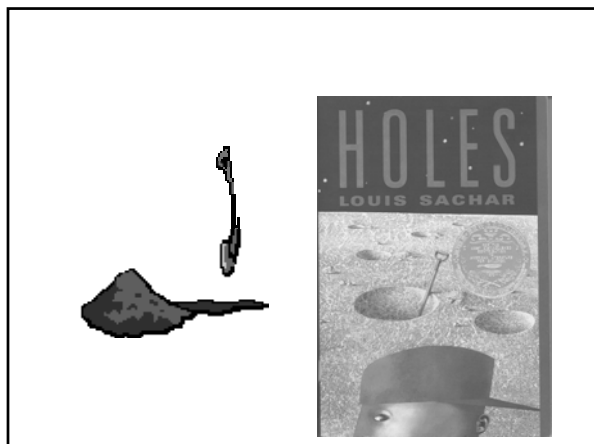
Skills needed to make inferences:

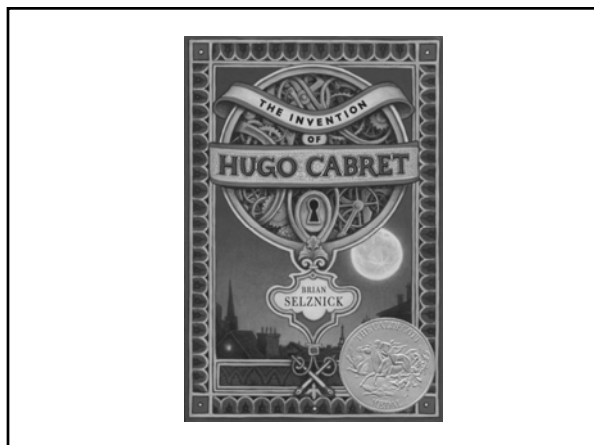
- Comprehension of linguistic input
 - **Vocabulary**
 - **Syntax**
- General world knowledge
 - **Including theory of mind (ToM)**
- Working memory
 - **Search for information in memory**
 - **Search in other places (look back at text)**
 - **Bring the content of working memory back into play (reactivate what triggered the search)**
 - **Check that the inference explains the premises held in working memory**

Karaskinski, C., & Weismer, S.E. (2010). Comprehension of inferences in discourse processing by adolescents with and without language impairment. *Journal of Speech, Language, and Hearing Research, 53*, 1268-1279.

The procedure is quite simple. First you arrange items into different groups. Of course one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities that is the next step; otherwise, you are pretty well set. It is important not to overdo things. That is, it is better to do too few things at once than too many. In the short run this may not seem important but complications can easily arise. A mistake can be expensive as well. At first the whole procedure will seem complicated. Soon, however, it will become just another facet of life. It is difficult to foresee any end to the necessity for this task in the immediate future, but then, one never can tell. After the procedure is completed one arranges the materials into their appropriate places. Eventually, they will be used once more and the whole cycle will then have to be repeated. However, this is part of life.

BRANSFORD, J. D., & JOHNSON, M. K. (1972). Contextual prerequisites for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning & Verbal Behavior, 11*, 717-726.





Classes of Inferences

- Anaphoric references: pronoun/noun-phrase that refers to previous text entity
- Bridging/relational: semantically or conceptually relating sentence to previous content
- Explanation-based/causal: explain what is read by a causal chain or network of previous events and states
- The warden scratched Mr. Sir. She was furious with him.
- Making the connection between the eating onions and not being bitten by lizards
- Stanley befriendng Zero, carrying him up the mountain and saving his life breaks the curse of Madam Zaroni and brings the family good luck.

Snow, C. (2002). *Reading for understanding: Toward an R & D program in reading comprehension*. Rand Corporation.

Classes of Inferences

- Predictive: forecast what events will unfold
- Goal: infer intentions of agent
- Elaborative: properties and associations that cannot be explained by causal relationships
- I predict that Hugo and the old man will become friends
- Hugo steals toys because he needs the parts for the automaton
- The Warden's nail polish has rattlesnake venom in it. So when she scratches Mr. Sir, you must realize that the scratch will be more painful and harmful than an ordinary scratch

Snow, C. (2002). *Reading for understanding: Toward an R & D program in reading comprehension*. Rand Corporation.

% Errors on Literal and Inferential Questions

	Unseen		Seen	
	Literal	Inferential	Literal	Inferential
Less skilled	29.2	45.8	3.6	35.4
Skilled	10.9	15.6	1.0	9.9

Oakhill, J., & Yuill, N. (1996). *Reading comprehension difficulties: Processes and intervention*. Mahwah, NJ: Erlbaum.

Types of Inferential Statements by Average and Below Average 3rd Grade Readers

Number and Type of Inferential Statements in the Think-Aloud Condition by Group

Statement type	AR ^a		BA ^a		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Explanation	9.3	1.7	7.8	2.2	2.53*
Prediction	3.6	2.4	3.9	2.4	-0.39
Association	2.4	1.8	2.0	1.4	0.70

Note. AR = average reader group; BA = below-average reader group.

^a*n* = 20.

**p* < .05.

Laing, S.P., & Kamhi, A.G. (2002). The use of think-aloud protocols to compare inferencing abilities in average and below-average readers. *Journal of Learning Disabilities*, 35, 436-447.

Can a verbal inference task differentiate between:

- Children with language impairment (CwLI) and matched peers with typical language development (TLD)
- Children with specific language impairment (CwSLI) and children with pragmatic language impairment (CwPLI)

Adams, C., Clarke, E., & Haynes, R. (2009). Inference and sentence comprehension in children with specific or pragmatic language impairments. *International Journal of Language and Communication Disorders*, 44, 301-318.

Sentence Comprehension (SC) Task

- 29 items that required the child to point to a picture (from a set of four choices) or written word on the test booklet (again from a set of four words read by the evaluator).
 - **direct and indirect objects** ("She gave the baby the book.")
 - **passive comprehension** ("The dog was splashed by the girl.")
 - **embedded clauses** (The crocodile that bit the lion was small.)
 - **complex continuous past** ("Which one have I already eaten?")

Adams, C., Clarke, E., & Haynes, R. (2009). Inference and sentence comprehension in children with specific or pragmatic language impairments. *International Journal of Communication Disorders*, 44, 301-318.

Inferential Comprehension (IC) task

- Picture of kitchen in aftermath of a burglary.
 - **Householder and policewoman pictures with clues**
 - Torn piece of cloth
 - Footprint
 - Broken window
- Examiner read short text about picture
- Students asked 11 questions designed to tap inferencing

Inferential Comprehension (IC) Questions

- Why was the dog barking?
- Why is the policewoman there?
- What happened when the burglar got into the house?
- What clues will the police find about who broke in? (prompt allowed)
- Why did the burglar break into the back of the house?
- How does the family feel now? (prompt allowed)
- How do we know it was the burglar who broke the window?
- Why do you think the burglar took only the watch?
- Why would someone steal something? (prompt allowed)
- What will the family do now because of the burglary? (prompt allowed)
- Should all theft be treated in the same way? (prompt allowed)

Coding of inference comprehension

- **Failure of literal comprehension**, e.g., the child is asked, "Why do you think the burglar took only the watch?" and responds, "cos he crepted in."
- **Wrong inference**: answer is irrelevant in the context of the story, e.g., when asked "How does the family feel now?" the child responds, "feel better if go to hospital."
- **Immature inference**: the child ties to link the question to his own experience/picture. The answer is relevant to the picture but based on limited or immature world knowledge, e.g., when asked, "Why would someone steal something?" the child responds, "because they ain't got a watch."
- **Odd inference**: these are typically unique or unexpected given the story premise or contained excessive and/or irrelevant detail, e.g. when asked, "Why was the dog barking?" the child responds, "He was telling the truth."
- **Because**: minimal "because he did" answer
- **Scope**: child gives a response that is along the right lines, but is either too specific or too vague to be counted as correct, e.g., when asked, "why was the dog barking?" the child responds, "because someone said 'ow'."
- **Lack of expressive ability**: the child produces an answer that is syntactically incomplete or unintelligible
- **No response**

Results

- **CwLI**
 - **Significant problems with inferential comprehension compared with their age matched peers**
 - **Made significantly more literal comprehension errors or simply failed to respond to inference questions than their SC matched peers.**
 - **No more likely to make wrong inference types than SC matches.**
 - Suggests that CwLI cope less well with an IC task than might be expected by their ability to comprehend isolated sentences
- **CwSLI**
 - **The CwSLI had significantly higher IC scores than CwPLI**
 - **No significant differences between the types of inferences that CwSLI and CwPLI made**

Results

- CwPLI
 - Trend for the CwPLI to perform more poorly on developmentally more complex inference items
 - Did not make significantly more odd or wrong inferences than CwSLI on any of the questions
 - Had significantly lower scores than their CA and SC matched groups.

Skills needed to make inferences:

- Comprehension of linguistic input
 - **Vocabulary**
 - **Syntax**
- General world knowledge
 - **Including theory of mind (ToM)**
- Working memory

Karasinski, C., & Weismer, S.E. (2010). Comprehension of inferences in discourse processing by adolescents with and without language impairment. *Journal of Speech, Language, and Hearing Research*, 53, 1268-1279.

Inferencing in 4 Groups of 8th Grade Students

- The normal language group (NL) had normal skills in all three components required for inferencing
- The group with specific language impairment (SLI) had normal general world knowledge, but deficits in comprehension of linguistic input and working memory
- The group with nonspecific language impairment (NLI) had deficits in all three areas
- The group with low cognition (LC) had normal skills in comprehension of linguistic input but deficits in general world knowledge. Their working memory was better than the working memory of the SLI and NLI

Karasinski, C., & Weismer, S.E. (2010). Comprehension of inferences in discourse processing by adolescents with and without language impairment. *Journal of Speech, Language, and Hearing Research*, 53, 1268-1279.

Research Questions

- Are inference questions based on distant information more difficult to answer than inference questions based on adjacent information?
- Do adolescents without language impairment answer distance inference questions with greater accuracy than adolescents with language impairment?
- Are there differences in the types of errors across groups?
- Does working memory performance predict variation in distant inference accuracy beyond that explained by language and nonverbal IQ?

Results

- **Working memory** : All measures correlated highly with inference scores
- **Adjacent inference questions**
 - No difference between TD and LC groups
 - TD group better than SLI and NLI groups
- **Distance inference questions**
 - All groups of students had more difficulty with distant inference questions than adjacent inference questions
 - NL group performed significantly better than all other groups
 - LC group performed significantly better than those in the NLI group
 - LC and SLI groups did not significantly differ
 - No significant difference between the SLI and NLI groups

Factors common to those adept at inferencing

- Competent working memory
- Being an active reader who wants to make sense of text
- Monitoring comprehension
- Rich vocabulary
- Wide background knowledge
- Sharing same cultural background as that assumed by text

What to do to Develop Inferring

- Develop vocabulary
- Develop theory of mind
- Teach questioning
- Activate prior knowledge
- Teach summarizing

Vocabulary & Reading

- Orally tested vocabulary at the end of first grade is a significant predictor of reading comprehension 10 years later. (Cunningham, A.E., & Stanovich, K.E. (1997).
- Children with restricted vocabulary by third grade have declining comprehension scores in the later elementary years. Chall, J.S., , Jacobs, V.A., & Baldwin, L.E. (1990).
- Children acquire 3,000-4,000 words/year (Nagy & Anderson, 1984)

General Contexts that enable inferring of meaning

- Murderers are usually *incarcerated* for longer periods of time than robbers.
- Ben is fearless, but his brother is *timorous*.
- Dad gave *credence* to my story, but Mom's reaction was one of total disbelief
- When we invite the Paulsons for dinner, they never invite us to their home for a meal; however, when we have the Browns to dinner, they always *reciprocate*.

Teaching Vocabulary

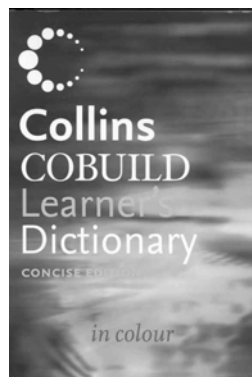
Word	Dictionary Definition	Friendly Definition
devious	straying from the right course; not straightforward	If someone is devious , he is using tricky and secretive ways to do something dishonest
vicarious	felt by sharing others' experiences	If someone is getting a vicarious feeling, she is sharing an experience by watching or reading about it
jaded	worn out; tired; weary	If someone is jaded , he has or has seen so much of something that he begins to dislike it
exotic	foreign; strange; not native	Something that is exotic is unusual and interesting because it comes from another country far away

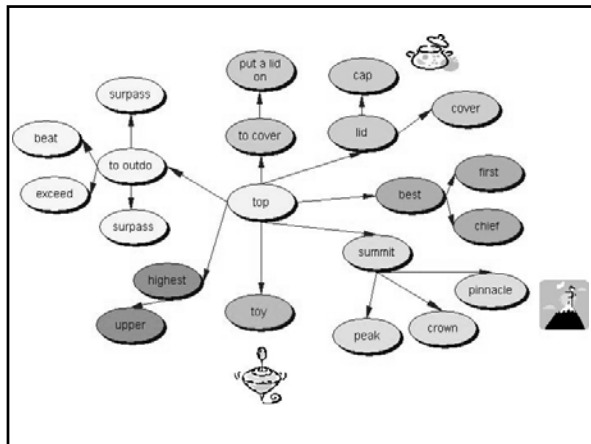
Sentences using dictionary definitions

- He was **devious** on his bike.
- We had a **vicarious** time at my friend's birthday party.
- After the baseball game our team was really **jaded**.
- The colonists were **exotic** in America.

www.collinslanguage.com

Collins for English Language Learners





Learning Multiple Meaning Words

- Many English words have multiple meanings
- Children with language impairments (LI) have fewer meanings for words
- Children with LI frequently have difficulty retrieving word meanings
- Ability to rapidly retrieve word meanings promotes comprehension

Nelson, J.R., & Marchand-Martella, N. (2005). *The multiple meaning vocabulary program*. Boston, MA: Sopris West.

Multiple meaning words: innocent

Nelson, J.R., & Stage, S.A. (2007). Fostering the development of vocabulary knowledge and reading comprehension through contextually-based multiple meaning vocabulary instruction. *Education and Treatment of Children*, 30, 1-22.

Multiple meaning words: innocent

- Not guilty of an offense
 - **Blameless:** Stanley was blameless of the robbery.
 - **Guiltless:** The court did not find Stanley guiltless.
 - **In the clear:** Stanley's social worker proved that he was in the clear.
- Not experienced
 - **Naïve:** Stanley was naïve about the functioning of the court.
 - **Unsophisticated:** Stanley's unsophisticated parents did not understand the implications of sending Stanley to Camp Green Lake.
 - **Unaware:** Zero was unaware that the sploosh would make him sick.
- Not dangerous or harmful
 - **Harmless:** A yellow-spotted lizard is not harmless.
 - **Risk free:** Being sent to Camp Green Lake was not risk free.
 - **Playful:** Sometimes the boys argued in a playful manner.

Multiple meaning words: Match the sentence to its meaning


- not guilty of an offense
- not experienced
- not dangerous or harmful
- Stanley thought his comment was **innocent**, but it made Zero very angry.
- Stanley was a really good kid; he was too **innocent** to be with boys who were real bullies.
- Stanley's parents knew Stanley was **innocent** of stealing the shoes.

Evaluating Vocabulary Knowledge

Red Zone Red-light words	Yellow Zone Yellow-light words			Green Zone Green-light words
I don't know the word	I understand the general meaning of the word but can't use it	I can give examples of the word	I can define the word	I know the word well and can use the word meaning
I need to stop and use clarifying strategies	I need to slow down and check my comprehension			I can read at the speed limit

Lubliner, S. (2005). *Getting into words: Vocabulary instruction that strengthens comprehension*. Baltimore: Brookes.

Stoplight Vocabulary

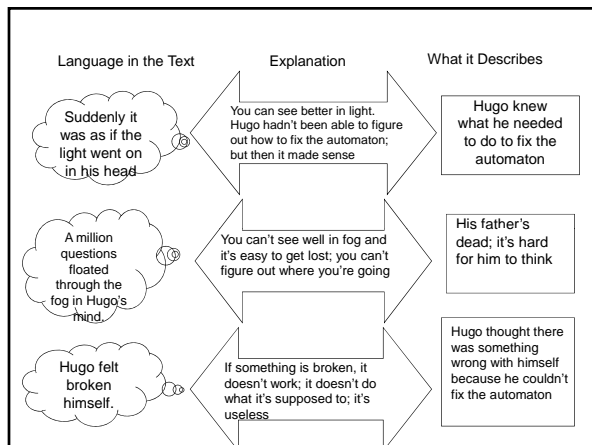


devious

capricious

pungent

Lubliner, S. (2005). *Getting into words: Vocabulary instruction that strengthens comprehension*. Baltimore: Brookes.



Theory of Mind

Ability to attribute mental states (beliefs, intents, pretending, knowledge) to oneself and others and to understand that others have beliefs, desires, and intentions that are different from one's own

Ability to predict what others are thinking and what they will do from what we know about them and the world

Doherty, M.J. (2009). *Theory of mind: How children understand others' thoughts and feelings*. New York: Taylor & Francis.

Required for TOM

- Ability to “read” affect cues
 - facial expressions
 - body postures/gestures
 - vocal tones
- Affective/emotional labels put on these behaviors
- Social cognition knowledge: understanding how situations cause emotions and emotions cause situations; expected behaviors in particular situations
 - Much of this learned through complex verbal coding
 - James asked, “Where is the dog hiding?”
 - James knew where the dog was hiding.
 - Andrea said, “Let’s go to the movies”.
 - Andrea thought her friend was at the movies.
 - Little Red Riding Hood thought it was grandma in bed, but it was the wolf.

Inferencing emotions in situations



Twinky was bouncing a ball. A bully took the ball. Twinky was...

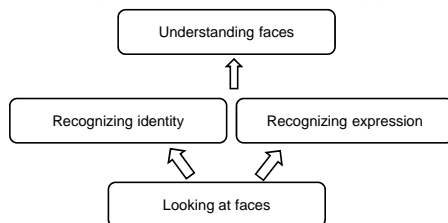
- Kindergarten children with language impairment (LI) and typically developing children (TD) were 100% accurate in pointing to pictures of happy, sad, mad, surprised
- TD and LI children were 100% correct in labeling happy, sad, mad; 4 of the 12 children with LI did not label surprised correctly
- Children with LI made significantly more errors inferring emotional reactions
 - Children with LI made more errors of a different valence

Ford, J.A., & Milosky, L.M. (2003). Inferring emotional reactions in social situations: Differences in children with language impairment. *Journal of Speech, Language, and Hearing Research*, 46, 21-30.

Emotions and Computer Programs



Let's Face It! is a joint project between the University of Victoria Brain and Cognition Lab and the Yale Child Study Centre. The program is a free multimedia, computer-based intervention that is designed to teach face processing skills to children with autism.

<http://web.uvic.ca/~letsface/letsfaceit/index.php>



Emotions and Computer Programs

<http://www.jkp.com/mindreading/>

angry

1	2	3	4	5	6
angry grumpy moaning moody	annoyed complaining furious wild	displeased explosive frustrated	bitter discontented exasperated heated indignant infuriated provoked	miffed needled	

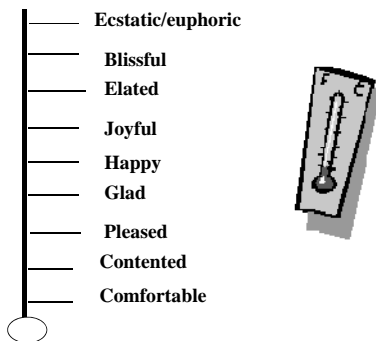
Mind Reading: The Interactive Guide for Emotions

Sad

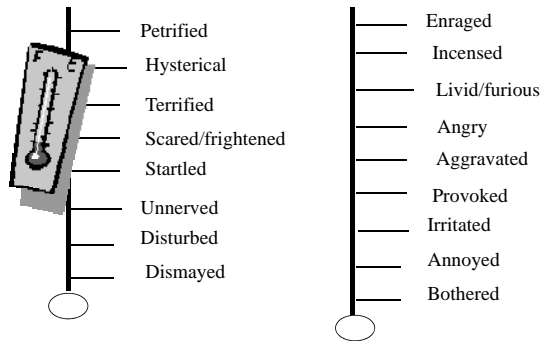
1	2	3	4	5	6
Lonely Lost Sad Tired Upset	Disappointed tearful	Discouraged Gloomy Heartache homesick Hysterical Troubled Weak Withdrawn	Despairing Devastated Disillusioned Dismayed Distraught Empty Grieving Resigned	Agonizing Anguished Condemned Grave Overwrought Pining Subdued Tormented Turmoil	Maudlin

Mind Reading: The Interactive Guide for Emotions

Emotional Thermometer



Emotional Thermometers



Sharing Book Stories: Landscape of Action

- What characters do
 - How they do it
- Mrs. Pig opened the door.**
The babysitter is a wolf.
The wolf is holding an umbrella.



Bruner, J. (1986). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.

Mr. And Mrs. Pig's Evening Out

Sharing Stories: Landscape of Consciousness

- What characters feel and think.
- Why they feel and think as they do.
- Making judgments about the characters
- Mrs. Pig doesn't know it's a wolf.
- The wolf is tricking Mrs. Pig. The wolf wants to eat the piglets.
- The baby pigs are scared, so they're running.



Mr. and Mrs. Pigs' Evening Out

TOM in Children's Books

- Books for preschool children contain many references to mental states
 - In 317 preschool books, 78% referred to internal states
 - 34% contained a false belief
 - 31% contained deception



Cassidy, K.W., et al. (1998). Theory of mind concepts in children's literature. *Applied Psycholinguistics*, 19 (3), 463-470.

Concepts Expressed by Conjunctions

Relationship	Belief about Propositional Truth	
	Belief	Disbelief or Uncertainty
Positive	Because (7 years)	If (11 years)
Negative	Although (11 years)	Unless (13-15 yrs)

Steps in Connective Development

- Personal:
 - My brother had to go to summer school *because* he failed English.
 - *If* I have \$10, I'll buy that new CD.
 - I won't get to go to the movies *unless* I clean my room. Or I'll go to the movies *unless* I don't clean my room.
 - I'll take the Hershey bar, *although* it's not my favorite.
- Narrative:
 - Zero dug Stanley's holes *because* Stanley was teaching him to read.
 - *If* Stanley finds something valuable, he'll get a day off.
 - Stanley won't get a day off *unless* he finds something the warden wants.
 - Stanley said he had taken the sunflower seeds *although* he had not.
- Theoretical/expository:
 - The ice melted *because* the temperature was above 32° F.
 - *If* it's attracted to the magnet, it's metal.
 - Take the blocks that are on the table *unless* they are wooden.
 - Illegal immigrants work hard *although* they are not paid much.

you eat lots of onions
if
the lizards won't eat you

When Stanley stole the truck
Stanley felt excited
but because
he was finally getting away

Strategies to Build Inferential Comprehension


• Think Aloud

Students read silently as teacher reads aloud.

↓

Teacher *thinks* through tricky spots and

Make predictions:



"From the title I think this will be about..."


Think Aloud


Teacher *thinks* through more difficult parts of the text and

Describes the pictures you form in your head about the information.

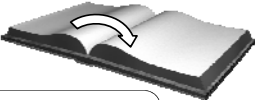
And it was over there, while my father and mother and I were driving in icy weather just north of Oslo, that our car skidded off the road and went tumbling down a rocky ravine." (The Witches, pg 7)

"I have a picture of this scene in my head and this is what it looks like...."






Think Aloud



Make connections explicit:
Show how to link prior information stated in the text to new information in text. "I remember about....and now...."

I remember the author had described how witches dressed. One important thing was they wore gloves. Now the author tells us about a woman wearing gloves "Gloves! She was wearing gloves!" (Dahl, 'The Witches' pg 36)



Think Aloud



Demonstrate fix-up strategies:
Show how to make sense of the passage.
“I’d better reread.” or “I’ll read ahead and see if I
can get some more information.”



Think Aloud

After you complete reading and Think Aloud,
encourage students to add their own thoughts to
yours.



Number of Comprehension Questions Answered Correctly by
Question Type, Group, and Condition

Question type/Condition	AR*		BA*		t
	M	SD	M	SD	
Think-Aloud					
Literal	5.4	0.7	4.1	1.4	3.56**
Inference	5.1	0.6	4.5	1.3	2.04*
Total	10.5	1.2	8.6	1.8	3.95**
Listen-Through					
Literal	4.0	1.3	3.7	1.5	0.78
Inference	4.1	1.5	3.8	1.5	0.63
Total	8.1	2.2	7.6	2.6	0.73
Total across conditions	19.0	2.9	16.0	3.7	2.40*

Note. AR = average reader group; BA = below-average reader group.

*n = 20.

*p < .05. **p < .01.

Laing, S.P., & Kamhi, A.G. (2002). The use of think-aloud protocols to compare
inferencing abilities in average and below-average readers. *Journal of
Learning Disabilities*, 35, 436-447.



Martin Luther King, Jr. – 5th Grade

- Explicit questions
 - **In some cities, what did blacks have to do on a city bus? (give up their seat)**
 - **Why was Rosa Parks arrested? (she didn't want to give up her seat)**
 - **What did many people do to protest Rosa Park's arrest? (don't know)**
 - **Name one way in which Martin Luther King was honored for his work. (a medal)**

Leslie, L., & Caldwell, J.S. (2011). *Qualitative Reading Inventory-5*. Boston: Pearson.

Martin Luther King – 5th grade

- Implicit Questions
 - **What was Martin Luther King's main goal? (change the law) (relational inference - integrate across text)**
 - **Why had people made laws separating blacks and whites? (don't know) (causal inference – prior knowledge)**
 - **What happened when people refused to ride the buses? (lost money ?? They had to change the law) (causal inference – across the text)**
 - **Why was Washington, D.C. an important place to protest unjust laws? (the president lives there) (causal inference – prior knowledge)**

Think Aloud Statements Indicating Comprehension

- **Restatement, paraphrasing, or summarizing** of what the author has said, preserving the language of the author or gist of the author's ideas.
- **Making new meaning:** makes an inference, draws a conclusion, or engages in reasoning.
- **Questioning that indicates understanding:** asks a question based on understanding of the text, e.g., questioning the motivation of a character, applying text content to a similar situation, or projecting text content into a future point in time
- **Noting understanding:** student recognizes that she or he understands what was read.
- **Reporting prior knowledge:** student reports a match with what was previously known or indicates that prior knowledge was absent or in conflict with the text.
- **Identifying personally:** relates the text to personal experiences, makes a judgment of some sort on the basis of personal experiences, states interest or lack of it, or indicates like or dislike for a topic.

Think Aloud Statements Indicating Lack of Comprehension

- **Questioning content:** asks questions about character motivation or the applications of a concept that indicate lack of understanding. The student also asks about the meaning of words or concepts.
- **Noting lack of understanding:** clearly states that she or he is confused about something.

Leslie, L., & Caldwell, J. (2011). *Qualitative reading inventory-5*. New York: Longman.

Think Aloud Checklist

Comprehension Habits		2 = Helpful 1 = Attempt					
EKN	Connects to background knowledge (self/world)						
	Connects to previous part of the text or to other texts						
	Notifies a conflict with background knowledge						
	Background Knowledge Notes:						
SUM	Summarizes to reduce & remember information						
	Connects summaries to main idea/author's purpose						
	Summarizing Notes:						
INF	Makes logical inferences based on BK & text evidence						
	Makes logical predictions based on BK & text evidence						
	Confirms or disconfirms inferences & predictions						
	Inference and Prediction Notes:						
QUE	Generates good questions that provide direction/purpose						
	Hypothesizes, seeks, & notices answers while reading						
	Question Notes:						
WOR	Uses context clues to figure out words						
	Use knowledge of word parts to figure out words						
	Word Meaning Notes:						
MON	Statements or questions indicating confusion						
	Uses fix-up strategies (look back, read ahead)						
	Uses text structure						
	Challenges text, critiques style/format/clarity						
	Comprehension Monitoring Notes:						

<http://www.jeffzwers.com/resources.html>

Types of Answers to QRI Questions

- Failure to link ideas across a passage – making relational inferences
- Failure to make causal inferences
- Failure to parse syntax
- Excessive elaboration or overreliance on prior knowledge
- Failure to know a key vocabulary word
- No response – did not answer

Dewitz, P., & Dewitz, P.K. (2003). They can read the words, but they can't understand: Refining comprehension assessment. *The Reading Teacher*, 56:5, 422-435.

Figure 8
Analyzing comprehension responses

Name _____		Grade _____						
Passage title Martin Luther King, Jr.	Grade level 5	Genre: Narrative <input checked="" type="checkbox"/> Expository <input type="checkbox"/>	Prior knowledge F <input checked="" type="checkbox"/> U <input type="checkbox"/>					
Question	Question type	Responses/difficulties						
	Explicit/Implicit	Correct/Incorrect	Relational inference	Causal inference	Faulty elaboration	Syntax	Vocabulary	No response
				Prior knowledge	Text based			
1. What was MLK's main goal?	Implicit	Incorrect	✓					
2.								
3.								
4.								
5.								
6.								
7.								
8.								
	Total							

Dewitz, P., & Dewitz, P.K. (2003). They can read the words, but they can't understand: Refining comprehension assessment. *The Reading Teacher*, 56:5, 422-435.

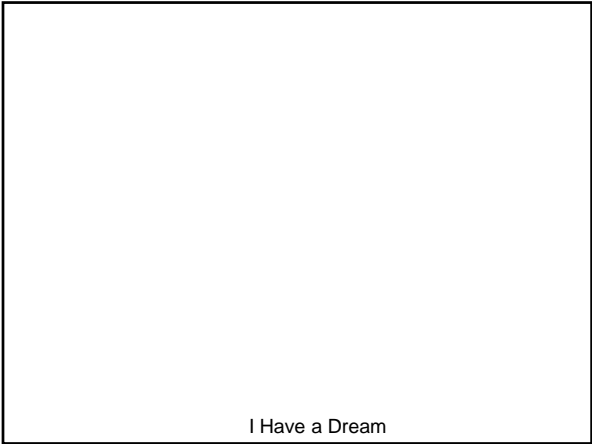


Observations
Stanley in hole
Lizards with yellow spots on him
Lizards aren't biting him
Seems to be looking up at someone
Doesn't look happy
Old chest in background
Many lizards on chest

Inferences

Maybe the chest is really important; Stanley was told to look for things in the holes.
Why aren't the lizards biting; is something protecting him?
Maybe he's looking at the warden, cause she wanted him to find something.
Maybe the chest is what the warden had been looking for.
The warden can't get the chest 'cause the lizards are on it.
Won't be able to get what's in the chest

Nokes, J.D. (2008). The observation/inference chart: Improving students' abilities to make inferences while reading nontraditional texts. *Journal of Adolescent & Adult Literacy*, 51:7, 538-546.



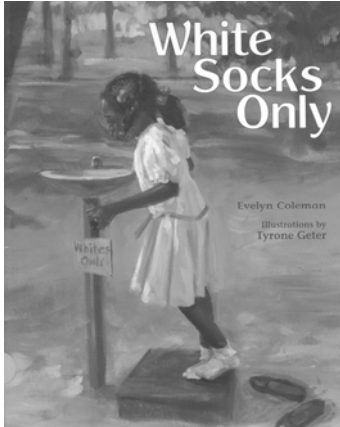
O/I Chart for Intro to "I Have a Dream" video

Observations	Inferences
Many, many people carrying signs. Signs say "jobs now", "we demand" Singing "we shall overcome"	They're protesting something they don't like – that's why people march sometimes
Street is completely full of people from side to side and as far as can see	Black people aren't getting the same jobs as white people
Most people are Black, some are White.	People are going to change something
Two rows of men, mostly Black, walking slowly side-by-side, dressed in suits	Looks like Washington DC
Big white building with columns; statue of Lincoln	Police might be afraid about what so many people would do
Very tall, pointed building	Probably Black leaders who want to create a good impression
Large, rectangular pool of water between buildings	White people want to show their support
Black man speaking at the front of the building	Maybe they're in Washington because they want the president to listen to them
Several policemen around man who is speaking	

Observation/Inference Rubric

- Observations
 1. Few observations
 2. Many observations but not specific or detailed
 3. Many observations including ones that are specific and detailed
- Inferences linked to observations
 1. Some inferences but they are not based on observations
 2. Bases inferences on observations but does not show the relationship
 3. Bases inferences on observation and shows the relationship
- Inferences
 1. Makes few inferences or inferences that have no basis
 2. Several good inferences, but explanations may be fairly obvious
 3. Many good inferences, including ones that show depth of thinking

Nokes, J.D. (2008). The observation/inference chart: Improving students' abilities to make inferences while reading nontraditional texts. *Journal of Adolescent & Adult Literacy*, 51:7, 538-546



How Do You Know Inferencing Strategy

- Situation: Water fountain with sign, "Whites Only;" little girl takes off her black shoes and steps up to the fountain in her white socks.
- My inference: "Whites Only" doesn't mean white clothes; it means only white people can drink from the fountain. White people will get mad when they see a Black girl drinking from the fountain.
- How do I know? The story happened a while ago. The person telling the story said she is telling a story about her grandmother. Before Martin Luther King, Black people couldn't eat or drink where White people did.

idea from:
Richards, J.C., & Anderson, N.A. (2003). How do I know: A strategy to help emergent readers make inferences. *The Reading Teacher*, 57, 290-293.

Question-Answer-Relationships

- Where is the answer?
 - **Right there!**
Words are right there in the text
- Where is the answer?
 - **Think and search!**
Words are in the text, but not spelled out for you. Think about what the author is saying.
- Where is the answer?
 - **You and the author!**
Think about what you have learned and what is in the text.
- Where is the answer?
 - **On your own!**
Answer is in your head.



Raphael, T.E. (1986). Teaching question/answer relationships, revisited. *The Reading Teacher*, 39, 516-522.



QAR (Question-Answer-Response)
Passage to Freedom: The Sugihara Story

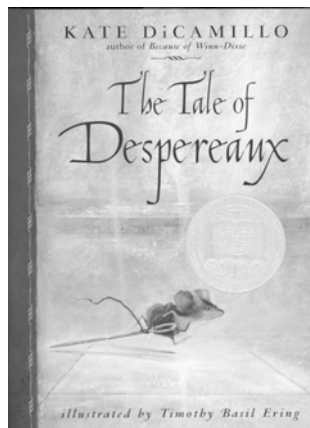
- Right there
 - Why were the Sugihara family living in Lithuania?
- Think and search
 - In what ways did Hiroki's life change after the Polish Jews came to his house?
- Author and you
 - What is a visa?
 - Why didn't Mrs. Sugihara help write the visas?
- On you own
 - Can you think of someone else who has risked his or her own life to save other persons?

Perspectives		
Mr. Sugihara	Events	Jews
willing to listen; asked Japanese government what to do	many people come to the embassy	terrified; desperate to escape Nazis
says can't help; asks again; concerned for Jews	government denies visas	more people gather; increasing worry, terror
concerned about self; compassionate, worried about Jews' safety	Sugihara decides to go against government	thrilled, relieved
exhausted; worried about family and Jews	Sugihara writes visas	grateful
concerned, then relieved when hears from survivors	Sugihara leaves address at Israeli embassy in Japan	treasured visas, felt great respect; wished to honor him

Reasons for Limited Character Inferences

- Focusing on what's happening not why
- Thinking that story characters are just like them
- Focusing on only a small part of the story
- Focusing on the main character's perspective only





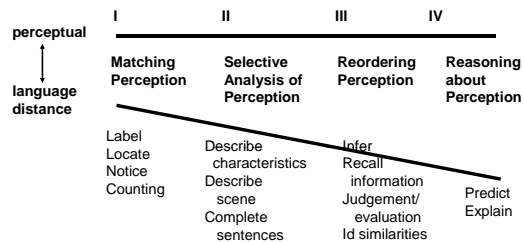
Coping with Inferencing Difficulties

- When students focus on what happened instead of why
 - Why did A act in this way?
 - What was B thinking when this occurred?
 - What did B want at this point?
 - How is A feeling now?
- When students misinterpret character's feelings and thoughts because they are considering only their own perspective
 - Is that the way you would have felt?
 - In what way is (character) different from you?
 - Since the character is different in this way, how do you think the character felt?
 - Let me reread some of the parts that may help us understand why the character might respond differently than you would.

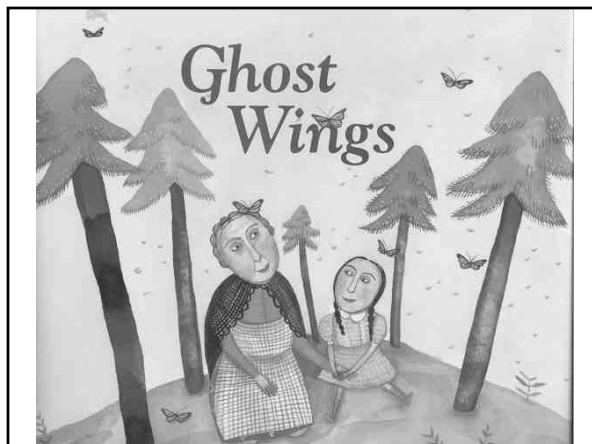
Coping with Inferencing Difficulties

- When students' replies are inadequate because they are focusing on only one part of the story instead of the whole
 - What else might the character want?...be thinking? be feeling?
 - Think about the part where the character did X and Y at the beginning.
 - What does that tell you about what the character might be thinking now?
- When students consider only one character's perspective
 - We mentioned A. What about B? How is B feeling?
 - What did A believe that B was thinking/feeling/ wanting?
 - What did B believe that A was thinking/feeling/ wanting?
 - When A did that, how did A think B would react?
 - What was A believing about B when A did that?

Perceptual-language distance



Blank, M., Rose, S.A., & Berlin, L.J. (1978). *The language of learning: The preschool years*. New York: Grune & Stratton.
van Kleeck, A. (2003). Research on book sharing: Another critical look. In van Kleeck, S.A. Stahl, & E.B. Bauer (Eds.), *On reading books to children*. Mahwah, NJ: Erlbaum.



Abstraction Levels

Level 1

- Requires matching perception (answer immediately available)

Level 2

- Requires selective analysis of perception

Example

- Point to a Monarch butterfly.
- What do you see on Grandmother's ofrenda?
- What is a metate used for?
- What color are Monarchs?



Ghost Wings by Barbara Joosse

Abstraction Levels

Level 3

- Requires reordering of perception (prediction or reworking thoughts)

Level 4

- Requires reasoning about perception (reflect or interpret)

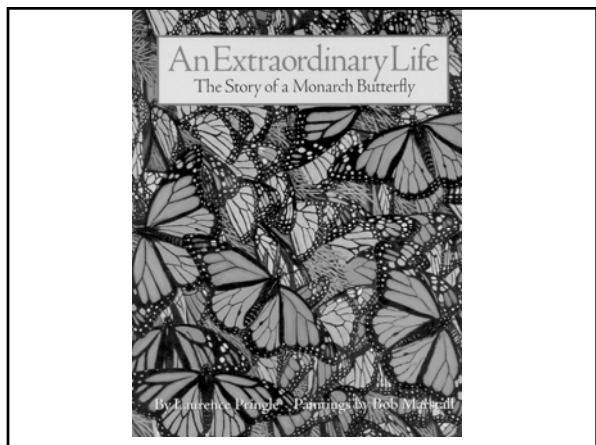
Examples

- What is a migration?
- Name something that the girl would not put on the ofrenda.
- Why did the girl tremble when she was in bed?
- Why are scientists tagging butterflies?









Approaches to Treatment

- Two positions
 - **Developing competence**
 - **Accommodating to different skills**
- Blend positions
 - **70% accommodation to skill**
 - **30% development of competence**

Present more complex discourse in first half of lesson, because these demands are likely to elicit inadequate responses and hence lead to long simplification sequences

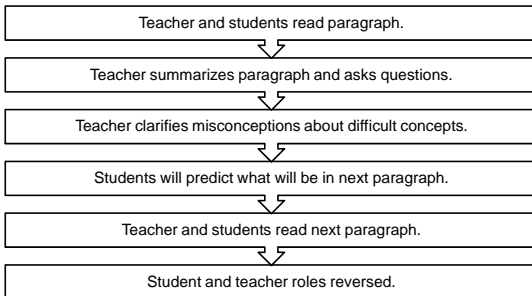
Reciprocal Teaching

- Prediction
- Questioning
- Clarification
- Summarization

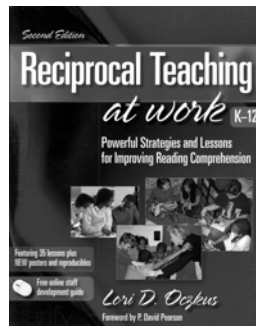


Palincsar, A.S., & Brown, A.L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1, 117-175.





Reciprocal Teaching



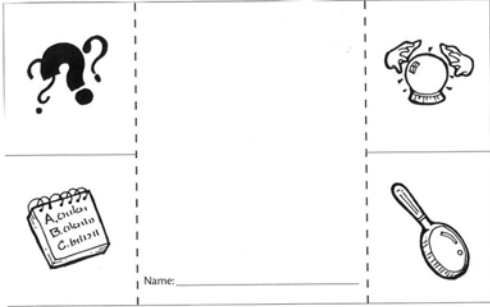
Palincsar, A.S., & Brown, A.L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1, 117-175.




Oczkus, L.D. (2010). *Reciprocal Teaching at work*. Newark, DE: International Reading Association.

 <p>Predict</p> <p>Use cues from the text or illustrations to predict what will happen next</p> <ul style="list-style-type: none"> •I think...because... •I'll bet...because... •I suppose ...because... •I think I will learn...because... 	 <p>Question</p> <p>Ask questions as you read. Some are answered in the book and others are inferred</p> <ul style="list-style-type: none"> •I wonder... •Who? What? When? Where? Why? How? •Why do you think?
 <p>Clarify</p> <p>How can you figure out tricky or hard words and ideas? I didn't get the (word, idea) so...</p> <ul style="list-style-type: none"> •Reread •Read on •Sound words out •Ask if it makes sense •Talk to a friend 	<p>Summarize</p> <p>Using your own words, tell the main ideas from the text in order</p> <ul style="list-style-type: none"> •This text is about... •This part is about... •First... •Next... •Then... •Finally 

Door Chart



Oczkus, L.D. (2010). *Reciprocal Teaching at work*. Newark, DE: International Reading Association.



Oczkus, L.D. (2010). *Reciprocal Teaching at work*. Newark, DE: International Reading Association.

Overcoming Difficulties

Problems Predicting

- Making predictions not based on textual cues
- Making simple surface level predictions
- Not using prior events to predict in fiction
- Not using text features to predict in nonfiction
- Not returning to predictions after reading to check accuracy

Try...

- Modeling predictions using think-alouds and text cues
- Modeling surface-level and below surface-level predictions
- Periodically summarize what has happened so far and add, "Now I think... because...."
- Asking students to preview illustrations and headings and think about what they will learn from expository text

Oczkus, L.D. (2010). *Reciprocal Teaching at work*. Newark, DE: International Reading Association.

Make the Text Structure Obvious

Narratives



Braidy



Story Grammar Marker

Definitions/Biographies



Sara Smith

(<http://www.expandingexpression.com/eet.htm>)

Green group
Blue do
What does it look like?
What are its parts?
White where
What else do I know?

www.mindwingconcepts.com

Overcoming Difficulties

Problems Questioning

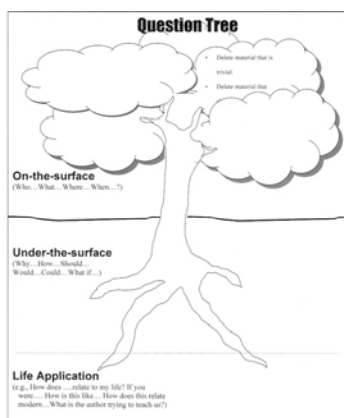
- Asking only literal, trivial, or superficial questions
- Not asking any inferential questions
- Younger students may not understand what a question is

Try...

- Modeling how to formulate different types of questions
- Modeling higher level questions that require using textual cues and prior knowledge
- Asking students to reflect: How does this question help us understand the text
- Providing question starters, e.g., "Why do you think...?"
- Having students alternate roles – one student read aloud and the other asks a question

Oczkus, L.D. (2010). *Reciprocal Teaching at work*. Newark, DE: International Reading Association.

Zwiers, J. (2010). *Building reading comprehension habits in grades 6-12: A toolkit of classroom activities*. Newark, DE: International Reading Association.



Overcoming Difficulties

Problems clarifying

- Skipping the clarifying step because they think there is nothing to clarify
- Clarifying words, not ideas
- Confusing clarifying with questioning
- Letting the teacher do all the clarifying

Try...

- Model words and ideas to clarify
- Using the prompt "I don't get the [word, idea, chapter] so I..."
- Requiring every student to provide an example (if they have nothing to clarify, ask them to select a word/idea a younger student might have trouble with)
- Giving students copy of text and having students underline words to clarify in one color and sentences to clarify in another
- Modeling the difference between questioning and clarifying

Oczkus, L.D. (2010). *Reciprocal teaching at work*. Newark, DE: International Reading Association.

Overcoming Difficulties

Problems summarizing

- Giving summaries that are word-by-word retellings
- Providing summaries that miss main points or are too long
- Rarely including main themes in summaries

Try...

- Having students contribute to a teacher-guided summary
- Teaching strategies for summarizing
 - Delete material that is trivial.
 - Delete material that although important, is redundant.
 - Substitute a superordinate term for a list of items/actions, e.g., *pets* for *cats, dogs, goldfish, gerbils, and parrots*.
 - Select a topic sentence.
 - If there is no topic sentence, invent your own.



Oczkus, L.D. (2010). *Reciprocal Teaching at work*. Newark, DE: International Reading Association.



Man's Mind, Once Stretched By A New Idea,
Never Regains Its Original Dimensions!

Conference Schedule

Monday: 12:00pm EST Temple Grandin, Ph.D.; Linda Schreiber, M.S., CCC-SLP; Kristine Retherford, Ph.D., CCC-SLP

Tuesday: 12:00pm EST Carol Westby, Ph.D., CCC-SLP
3:00pm EST Michelle Garcia Winner, M.A., CCC-SLP

Wednesday: 12:00pm EST Sylvia Diehl, Ph.D., CCC-SLP
3:00pm EST Rhea Paul, Ph.D., CCC-SLP

Thursday: 12:00pm EST Emily Rubin, M.S., CCC-SLP
3:00pm EST Elisabeth Wiig, Ph.D., CCC-SLP

Friday: 12:00pm EST Round Table with Sylvia Diehl, Emily Rubin, Carol Westby, and Elisabeth Wiig

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www.uwec.edu/ce/programs/education/slpcredit.htm
