

MODEL EXPLICIT THINKING ALWAYS: USING METACOGNITION TO STRENGTHEN LANGUAGE COMPREHENSION



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Presenter Information

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- EKU Faculty member
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- Not applicable

Learning Outcomes

1. Attendees will identify how metacognition develops in typically developing children.
2. Attendees will describe how metacognitive ability impacts listening comprehension and reading comprehension.
3. Attendees will identify and describe evidence-based techniques to facilitate growth in metacognition.

Today's Presentation

- 1 Defining Metacognition
- 2 Significance of Metacognition
- 3 Development of Metacognition
- 4 Instructional Strategies and Techniques

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Defining Metacognition

(Flavell, 1979; Griffith & Ruan, 2005; McGuire, 2015)



- "Knowledge and cognition about cognitive phenomena" (Flavell, 1979, pg. 906)
- Influenced by three variables:
 - Self
 - Task
 - Strategies
- "A big brain outside of your brain looking at what your brain is doing" (McGuire, 2015, pg. 16)

Defining Metacognition (Chatzipanteli, Grammatikopoulos, & Gregoriadis, 2013, p. 1223)

- High level of thinking that involves active control over the cognitive processes engaged in learning
- Consists of two components:
 1. Knowledge of cognition
 - Declarative knowledge
 - Procedural knowledge
 - Conditional knowledge
 2. Regulation of cognition
 - Planning
 - Monitoring
 - Evaluating



Defining Metacognition (Flavell, 1979; McGuire, 2015)

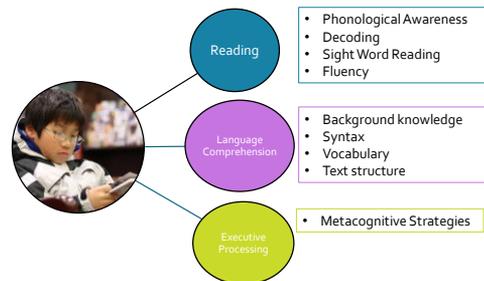
- Involves the ability to
 - Think about one's thinking
 - Be consciously aware of oneself as a problem solver
 - Monitor, plan, and control processing
 - Accurately judge level of learning



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Reading Comprehension for Adolescents (Deshler & Hock, 2007)



Reading Comprehension= Mental Problem Solving (Glaser & Moats, 2008)

- Rereading or searching the text to clarify
- Asking oneself a question and seek the answer before continuing
- Mentally summarizing what has been read so far
- Predicting where the text is going
- Knowing how to recognize the main idea and details
- Knowing what to expect of certain text genres or organizational features
- Recognizing key transition words that signify logical relationships in text



Qualities of an Expert (Almasi, 2015)

- Possesses an extensive knowledge base
- Motivated to use strategies
- Cognitively aware
- Able to analyze the task
- Possesses a variety of strategies for accomplishing the desired goal



Significance of Metacognition

(Almasi, 2003; Pressley, 1986)

Novice Readers

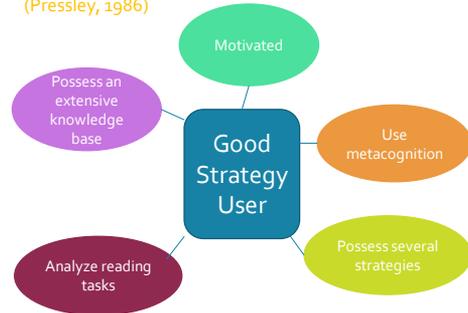
- Focus on decoding individual words
- Cannot adjust reading rate
- Not aware of alternative strategies for improving comprehension and memory of text
- Don't monitor comprehension

Expert Readers

- Rapid decoding skills
- Large vocabulary
- Phonemic awareness
- Knowledge of text features
- Knowledge of a variety of strategies to increase comprehension and memory of text

Good Strategy User Model

(Pressley, 1986)



Metacognition is the key to strategic processing!



Reading Strategies (Almasi, 2003)



Word Recognition	Comprehension		Fix-Up Strategies
Know words by sight	Look at pictures, titles, headings	Identify text structure	Reread text
Use phoneme-grapheme correspondences	Activate prior knowledge	Create mental images while reading	Read ahead for clarification
Use orthographic patterns	Set purposes for reading	Question one's understanding while reading	Question one's understanding
Use context clues	Make (and revise) predictions	Highlight or make marginal notes	Ask or discuss with others
Make analogies to known words	Relate new knowledge to old knowledge	Make inferences	

Conversational Strategies



Speaking Strategies	Listening Strategies		Fix-Up Strategies
Think about situation	Activate prior knowledge	Create mental images while listening	Ask for clarification or repetition
Think about partner's experiences in selecting words	Set purposes for listening	Question your understanding while listening	Use outside reference sources at a later time
Use specific words	Make inferences and predictions	Relate new knowledge to old knowledge	Discuss with others
Don't overuse filler words	Think of morphemic structure of unknown words	Use context clues to figure out unknown words	
	Make analogies to known words	Make mental notes	

Why are some students not as strategic in language use?

(Almasi, 2005; Garner, 1990)

- May not be a routine part of school curriculum
- Lack of knowledge about reading process
- Lack of motivation
- Decreased metacognition
- Primitive routines
- Decreased transfer of strategies



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Metalinguistic and Metacognitive Verbs (Nippold, 2016)

- Verbs related to the acts of speaking (metalinguistic) and thinking (metacognitive)
- Also known as "literate verbs"
- Astington and Olson's (1987) investigation indicated:
 - Comprehension gradually improved with increasing participating age
 - Mastery not evident until college
 - Performance on literate verb tasks was positively correlated to students scores on measures of vocabulary and critical thinking

Metalinguistic and Metacognitive Verbs (Nippold, 2016)

- Epistemological expressions:
 - Verbs of certainty: to know, believe, think, guess, expect, to be sure
 - Verbs of veracity: to tell the truth, kidding, fooling, lying, pretending, teasing
 - Verbs of cognitive processes: to remember, to forget, figure out
- Age related increase in epistemological expressions exists (Watson, 2000)

Metacognition in Young Children (Whitebread, Almeqdad, Bryce, Demetriou, Grau, & Sangster, 2010)



- At one time, metacognitive skills were believed to emerge around the age of 8-10 years
- Preceded by other cognitive abilities such as theory of mind
- Theory of mind is an earlier development and predicts later metacognitive ability
- Metacognition plays a critical role in students' memory
- More recent research has indicated metacognition may emerge as early as 3-5 years of age

What should students know and be able to do at specific grade levels? (Hougen & Smartt, 2012)

- Comprehension instruction begins through direct instruction in listening comprehension
- In Pre-K, students should be able to:
 - Reenact a story using puppets or through dramatic play
 - Provide simple oral retelling of story
 - Identify favorite part of story
 - Ask and answer questions about the text
- In Kindergarten, students should be able to:
 - Make logical predictions
 - Retell stories including info from beginning, middle, end
 - Identify main character, setting, and retell main event
- In grades 1 and 2, students should be able to:
 - Make inferences and provide evidence from text to support thinking
 - Retellings should be sequenced appropriately and include the problem and solution of a story

What should students know and be able to do at specific grade levels? (Hougen & Smartt, 2012)

- By 3rd grade,
 - Monitor and adjust use of strategies to improve comprehension of complex text
 - Summarize main events
 - Describe characters, relationships, and changes
 - Explain cause-effect relationships
 - Identify details that support main idea

What should students know and be able to do at specific grade levels?

(Haugen & Smartt, 2012)

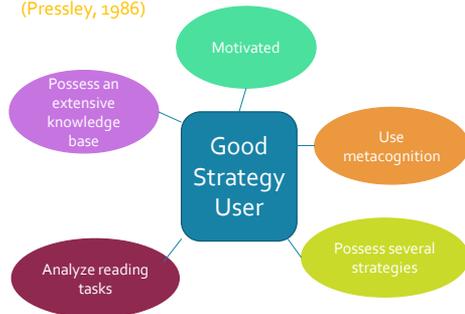
- By end of 6th grade,
- Comparing and contrasting stories of different genres
- Cite text evidence and quotes to support inferences and summary statements
- Refer to quotes in the text when drawing inferences
- Compare and contrast one author's version of events to another's
- Integrate information and facts from several sources in order to write or speak effectively about an issue or event
- Read text independently and answer comprehension questions

Today's Presentation

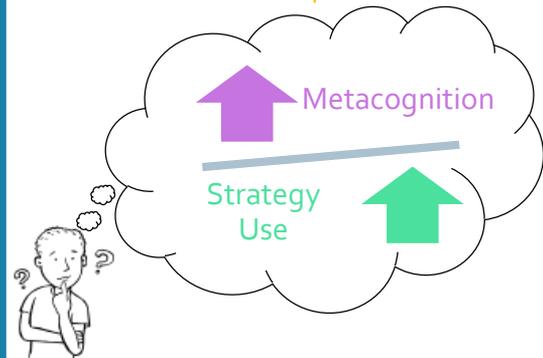
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Good Strategy User Model

(Pressley, 1986)



Instructional Techniques



Assessment of Metacognition

(Almasi, 2005)

- Anecdotal Reporting
- Observation
- Self Report
- Metacognitive Interviews
- Text interviews
- Miscue analysis



Cautionary Tale of Self-Reporting

(Almasi, 2005)

- Metacognition is a process not a product!
- Accuracy of self report data is highly influenced by a student's ability to discuss their cognitive abilities
 - Memory constraints
 - Awareness of all ongoing processes?
 - Students may report use of metacognitive strategies, but not routinely use them
 - Limited language skills



Types of Self Reports (Almasi, 2005)

Think Alouds

- Verbal report in which a learner expresses everything he is thinking as he is performing a given task
- Strengths
 - Ease of use
 - Provide insight into metacognition
- Limitations
 - Increased demand for learner
 - Difficult for learners who are quiet or less verbal
- Modeling is a must!
- Provide opportunity to practice
- Modifications may be necessary
 - Audio/video record
 - Number texts
 - Prompts/Reminders
 - Visual cues

Types of Self Reports (Almasi, 2005)

Metacognitive Interviews

- Interview providing insight about a learner's use of strategic processing during reading
- Questions may include:
 - What do you do when you read something that doesn't make sense?
 - What do you do when you come to a word you don't know?
- Strengths
 - Provide insight into a learner's strategic processing
 - May be easier for some learners to talk about their thinking rather than write about it
- Limitations
 - Difficult for children with language learning disabilities

Applied Learning Activity: "Metacognitive Interviews"

Interview Questions

1. When you are reading what do you do if you come to something you don't know?
2. What do you do when you read something that doesn't make sense?
3. Let's say the kindergarten teacher asks you to help her during reading time. How would you help teach a kindergarten student?

Student's Response

1. I try to sound out the letters in the word. I ask my mom for help
2. I don't know. Everything pretty much makes sense
3. Help him sound out words. Start with short easy words.

Types of Self Reports (Almasi, 2005)

Text Interviews

- Interview involving interaction with authentic texts
- Variety of texts are available



- Questions may include:
 - How would you go about reading this text?
 - What kinds of things do you do before you start to read?
 - What kinds of things do you do while you are reading to help you read the text?
 - What kinds of things do you do after you read to help you understand or remember the text?

Types of Self Reports (Almasi, 2005)

Miscue Analysis

- Analysis of types of errors learners make while reading aloud
- Five types of oral reading errors:
 - Omissions
 - Substitutions
 - Mispronunciations
 - Insertions
 - Repetitions



Assessment of Metacognition

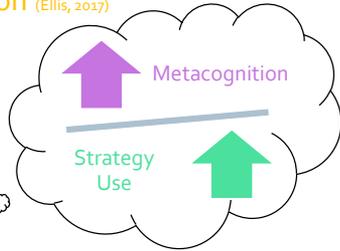
(Almasi, 2005)



- Index of Reading Awareness (Paris & Okla., 1986)
- Meta-comprehension Strategy Index (Schmitt, 1990)
- Learning Strategies Inventory (McGuire, 2015)

Intervention focused on Metacognition (Ellis, 2017)

Model
Explicit
Thinking
Always



Intervention Technique

(Hougen & Smartt, 2012)

Think-Alouds

- Encouraging students to verbalize their thoughts during reading in order to make text connections and encourage active thinking and questioning
- Teachers can model the think aloud strategy



Guiding Principles for Intervention

(Hougen & Smartt, 2012)

Explicit Instruction with Modeling

- Clear about expectations
- Providing clear instruction with unambiguous language
- Modeling what is required
- Concepts are explained in ways that are concrete and visible
- Students are actively engaged

Systematic Instruction with Scaffolding

- Instruction is organized
- Instruction provides necessary "prerequisite" skills so students can learn new skills
- Tasks are analyzed so that instruction targets easier, more concrete skills before difficult, abstract skills
- Students receive temporary support (i.e., scaffold) until they can complete the task independently

Guiding Principles for Intervention

(Hougen & Smartt, 2012)

Frequent Opportunities to Practice

- Students practice skills taught
- Instruction is delivered under the assumption that students may require different amounts of practice

Immediate Corrective Feedback

- Informing students if they are correct or incorrect and why
- Accurate performance is acknowledged and praised



Guiding Principles for Intervention

(Hougen & Smartt, 2012)

Ongoing Progress Monitoring

- Aware of where their students are in the learning process
- Look at data frequently and administer assessments as necessary to determine when students are struggling



Before you begin...

- Ensure students possess necessary vocabulary
- Provide scaffolds
- Consider procedural and conceptual knowledge



Three Overarching Qualities of Effective Vocabulary Instruction

(Hougen & Smartt, 2012)



1. **Integration**
 - link the new learning with something already known
 - Mix together and combine new concepts with old
2. **Repetition**
 - Provide multiple and varied exposures to the word in differing contexts
 - More than 20 exposures may be required before the word is remembered
3. **Meaningful Use**
 - Use the word in varied applications or context
 - Draw associations, contrast and compare words and concepts

Reading Strategies (Alamsi, 2003)



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	Make analogies to known words	Make mental notes	

Metacognitive Strategies

(Alamsi, 2003; Hougen & Smartt, 2012; McGuire, 2015)



Previewing	Preparing for Active Reading	Read Actively
<ul style="list-style-type: none"> • Look at section headings, boldface print, italicized words, and any charts or graphs. • Variation: read first line of every paragraph 	<ul style="list-style-type: none"> • Give yourself a purpose for reading • Develop a question you want to answer 	<ul style="list-style-type: none"> • Highlighting • Annotating • Notetaking • Marginal Glossing • Visualizing • Questioning

Metacognitive Strategies

(Alamsi, 2003; Hougen & Smartt, 2012; McGuire, 2015)



Paraphrasing	Questioning	Text Book Instruction
<ul style="list-style-type: none"> • Read one paragraph at a time • Put the information into your own words • Combine the information across paragraphs 	<ul style="list-style-type: none"> • Questions provide a purpose for reading • Encourage comprehension monitoring • Use varied question types 	<ul style="list-style-type: none"> • Teach text grammar • Teach how to use texts

Question Types (Alder, 2001)



"Right There"	<ul style="list-style-type: none"> • Answers are found in the text • Answer found in one place
"Think and Search"	<ul style="list-style-type: none"> • Questions based on facts in the text • Answers found in more than one place
"Author and You"	<ul style="list-style-type: none"> • Require you to use what you already know and what you learned in the text • Answers require you to think about past experience
"On Your Own"	<ul style="list-style-type: none"> • Answered based on prior knowledge and experience • Reading text may not be helpful when answering question

Text Book Instruction

(Alamsi, 2003; McGuire, 2015)

Text Grammar

- Text grammar: Organizational scheme of texts
- Expository Text Grammar:
 - Descriptive
 - Sequence/Time/Order
 - Comparison
 - Cause Effect
 - Problem Solution
- Make it visual!

Text Book Instruction

- Provide explicit instruction on organization of texts
 - Table of contents
 - Key Words
 - Glossary
 - Summary
 - Questions/Exercises
 - Glossary
 - Index
- Think vocabulary demands!
- Repeated opportunity to practice

Metacognitive Strategies

(Alamsi, 2003; Hougen & Smartt, 2012; McGuire, 2015)



Teach material to real or imagined audience

- Retell
- Summarize

Create practice exams

- Requires deep metacognitive ability
- Questioning

Monitoring, Clarifying, and Fixing Up

- Teach comprehension monitoring techniques
- Make it visual!

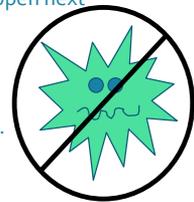
Meta-Cognition and Comprehension Monitoring (Alder, 2001)



- Students may use several comprehension monitoring strategies:
 - Identify where the difficulty occurs
 - Identify what the difficulty is
 - Restate the difficult sentence or passage in their own words
 - Look back through the text
 - Look forward in the text for information that might help them to resolve the difficulty

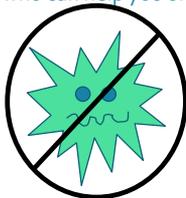
How to Avoid Clunks (Almasi, 2005)

- Look at pictures, titles, and headings
- Think about what you already know
- Predict what you think will happen next
- Set purposes while reading
- Identify text structure
- Picture things in your mind
- Question yourself as you read.



How to Overcome Clunks (Almasi, 2005)

- Slow down: Read ahead slowly and carefully
- Reread
- Ask someone who can help you understand



Collaborative Strategic Reading (Hougen & Smartt, 2012)

- CSR is a:
 - Research-based strategy
 - Combines reading comprehension strategies and structured cooperative learning for students in upper-elementary and middle school
- CSR Preview
 - Preview of text
 - Record predictions
- CSR During Reading
 - "Click vs. Clunk"
 - "Get the Gist"
- CSR After Reading

Seven Strategies to Teach Students Text Comprehension

(Alder, 2001)

1. Monitoring comprehension
2. Metacognition
3. Graphic and semantic organizers
4. Answering questions
5. Generating questions
6. Recognizing Story Structure
7. Summarizing



Strategies for Older Students

(McGuire, 2015)

SQ3R

- **Survey**
 - Look at intro, summary, bold print, italicized words, etc.
- **Question**
 - Devise questions that you think the text will answer
- **Read**
 - One paragraph at a time
- **Recite**
 - Summarize in your own words
- **Record or wRite**
 - Annotate in margins
- **Survey**
 - Look at intro, summary, bold print, italicized words, etc.
- **Question**
 - Devise questions that you think the text will answer
- **Read**
 - One paragraph at a time
- **Recite**
 - Summarize in your own words
- **Record or wRite**
 - Annotate in margins
- **Review**
 - Other view, remaining questions

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