

INTRODUCTION

Thinking Metacognitively

CHAPTER GOALS

- Become familiar with metacognitive thinking by learning about current research on metacognition and metacognitive processes.
- Reflect on metacognitive-oriented reading instruction by understanding metacognitive strategies during developmental stages.
- Contextualize the relationship between metacognitive strategies and pedagogy.

Metacognition is a critical aspect of effective reading and reading instruction, and before using metacognitive assessments as a tool to create individualized instruction in your classroom, it is important to possess a solid understanding of what metacognition is and why metacognitive strategies are, in fact, such an integral part of effective reading. Therefore, in order to help reading professionals understand why metacognition and metacognitive strategies should be integrated into reading instruction, this chapter provides a straightforward introduction to the connection between metacognition and reading comprehension, a description of some of the theoretical aspects of metacognition, an exploration of pedagogy that develops metacognition, and an explanation of how increasing metacognitive awareness has a direct impact on reading comprehension and motivation and the development of self-regulated readers. The chapter also provides an overview of the functions of metacognition, the developmental levels at which metacognitive strategy utilization occurs, and recommended phases for introducing metacognitive strategies to students.

What Is Metacognition?

Metacognition is defined as thinking about one's thoughts (Harris & Hodges, 1995); in other words, it is a cognitive process where one is aware of his or her own thinking. As you are reading this chapter, you may be thinking to yourself,

Why is the concept of metacognition important to teaching and literacy learning? You might also be thinking about what you know—or do not know—about metacognition and considering whether the concepts in this book will be difficult to understand, let alone implement in the classroom. However, the fact that you are thinking about this book, your level of understanding, and how to utilize the assessment resources to increase reading ability with your students *is* metacognitive thinking. You are making an evaluation of the book while at the same time activating your prior knowledge. You are also asking yourself questions. Is this book for me? How will this book help my students? How will I use metacognitive assessments with my students to understand their literacy levels? When you ask yourself these questions you are illustrating metacognition as you think about your own thinking.

As an educator, you likely already have an advanced level of metacognitive thinking by virtue of teacher education and training in reflective analysis. Your professional development resources have challenged you to think about your instruction in a way that improves student learning. However, it is not only important for teachers to be metacognitive thinkers, it is also important for students to think metacognitively.

Can metacognitive strategies be taught? When I spoke with my preservice and inservice teachers about metacognition, I was surprised to learn of the misconception that metacognition could not be taught in the classroom, that it was something achieved through experience and only with superior cognitive ability. In addition, many of these preservice and inservice teachers believed that it could only be developed later in life. However, Flavell (1979) and many other researchers—such as Paris, Baker, Palincsar, and Pressley—have since supported the idea that “Increasing the quantity and quality of children’s metacognitive knowledge and monitoring skills through systematic training may be feasible as well as desirable” (Flavell, p. 906).

The Connection Between Metacognition and Reading Comprehension

How is metacognition related to reading? The initial introduction of metacognition into reading was by Myers and Paris in 1978 with their research about children’s metacognitive knowledge and awareness of reading. Early research on metacognition conducted during the 1970s and 1980s launched the expedition into further research on how teaching metacognition and metacognitive strategies can be integrated in the curriculum to enhance reading comprehension (Baker & Brown, 1984; Flavell, 1979; Myers & Paris, 1978). The transition of the concept

of metacognition from cognitive psychology to educational psychology to reading education happened gradually. Acknowledgment for much of what we now know goes to subsequent research conducted by Garner (Garner & Reis, 1981; Garner & Taylor, 1982), Paris (Paris & Flukes, 2005; Paris & Paris, 2003; Paris & Stahl, 2005), Baker (Baker & Anderson, 1982), Palincsar (Palincsar & Brown, 1984), Pressley (Pressley, Brown, El-Dinary, & Afflerbach, 1995), and others.

Much of the early research utilizing metacognitive assessment tools in the area of verbal protocol analysis became the foundation for what we now know about reading processes. In their landmark study on reading behaviors of good readers, Pressley and Afflerbach (1995) found that expert readers and highly skilled readers use specific metacognitive strategies before, during, and after reading to aid in their comprehension and understanding of the texts being read. The behaviors that good readers use help them to construct meaning while reading, make evaluations of text, and make connections with prior knowledge and experiences. In fact, effective readers apply these strategies automatically. *Automaticity* is the function of performing a task with little attention or thinking, and metacognitively skilled readers have internalized the ability to utilize effective reading strategies when comprehending text so that they are able to utilize these strategies automatically (Lagerge & Samuels, 1974). Less able readers are less proficient in automatically applying metacognitive strategies and, therefore, teachers will need to teach the strategies (Block & Israel, 2004; Pressley & Afflerbach, 1995). Evidence supports that it is essential for exemplary literacy teachers to integrate metacognitive teaching strategies in their literacy instruction at all grade levels and assist students in becoming independent self-regulated readers through the utilization of metacognitive strategy applications (Block & Mangieri, 2004).

More recently, Baker (2005), who researches in the area of metacognitive development, did a thorough evaluation of the developmental differences in metacognition and the implications for metacognitive-oriented reading instruction, which can be found in *Metacognition in Literacy Learning* (Israel, Block, Bauserman, & Kinnucan-Welsch, 2005). Baker explains the implications for metacognitively oriented reading instruction, stating that “metacognitive skills should be taught within the context of authentic literacy engagement, and students should be given sufficient practice in their application that they know when, why, and how to use them relatively effortlessly” (p. 74).

Metacognitive strategies increase readers’ meaning construction, monitoring of text and reading comprehension, and their ability to evaluate the text they are reading. Metacognitively skilled readers are readers who are aware of knowledge, procedures, and controls of the reading process. They use this knowledge during the reading process to improve reading and comprehension ability. Table 1

Table 1. Contextualizing the Language of Metacognition With Literacy Instruction

Metacognitive Term	Definition	What This Term Might Look Like in the Classroom	Why Teachers Integrate the Strategy in Literacy Instruction
Automaticity	Performing a task without thinking or with little attention	Students are able to decode text without hesitation when they come to unknown words.	Teachers want students to read automatically; therefore, helping students be able to decode words would be valued.
Conscious Constructive Responses	Conscious processes carried out by good readers to help increase comprehension (Pressley & Afflerbach, 1995)	Good reading behaviors are exhibited consciously when used to obtain meaning before, during, and after reading.	Teachers want students to model good reading behaviors. In order for students to become knowledgeable about good reading strategies students need effective instruction.
Comprehension Monitoring	The noting of one's successes and failures in developing or attaining meaning, usually with reference to an emerging conception of the meaning of the text as a whole, and adjusting one's reading processes accordingly	A student stumbles when encountering a word that is unknown while reading, and rather than skipping the word and continuing reading, a good reader will utilize monitoring strategies to stop and try to discover the meaning of the unknown word.	In order for students of all ages to become more self-regulated and improve reading comprehension, students need to possess strategies that helps them monitor their own reading comprehension in order to develop into life long readers.
Metacognitive Strategies	Tools to help develop thinking processes and include control over reading (Israel, Block, Bauserman, and Kinnucan-Welsch, 2005)	A teacher helps increase students' reading comprehension when reading a story by modeling different types of planning, monitoring, and evaluation strategies.	The purpose of integrating metacognitive strategies with reading instruction is to improve reading comprehension and develop more effective and critical readers.
Self-Regulation	Setting realistic goals, employing strategies to achieve the goals, closely monitoring their attainment, and evaluating one's own thinking	Prior to reading a story, the reader is able to answer the question, "What is your purpose for reading this story."	Allowing students opportunities to be more in charge of their reading processes improves reading achievement.

(continued)

Table 1. Contextualizing the Language of Metacognition With Literacy Instruction (continued)

Metacognitive Term	Definition	What This Term Might Look Like in the Classroom	Why Teachers Integrate the Strategy in Literacy Instruction
Think-Aloud	A metacognitive strategy that can be used as an assessment in which cognitive thought processes are verbalized (Block & Israel, 2004; Israel, 2002)	When reading a nonfiction text, the teacher stops after the first few pages and says, "This story reminds me of a time I..." The teacher continues to read the story and stops when something is not clear. The teacher might say, "Why did the character..."	Teaching to develop metacognitive thinking helps develop skilled readers. Verbalizing ones thoughts provides information about the student's cognitive processes. Skilled teachers will use this information to understand the reader.

provides an overview of important terms that teachers can use to help them contextualize the language of metacognition and literacy instruction. This table is useful because it provides a visual image of what the term might look like in the classroom as well as the rationale for why teachers should integrate metacognitive thinking in the classroom.

Learning About Metacognitive Functions

There are three primary functions of metacognition: knowledge, procedural, and executive (Flavell, 1979). *Knowledge* refers to an understanding of metacognitive skills and strategies. Knowing when and how to perform metacognitive strategies defines the *executive* function of metacognition. *Procedural* functions of metacognition allow the reader to understand how to perform the strategies and then actually execute the strategies without thinking. For example, when a student successfully uses the monitoring strategy for reading comprehension, the following functions would be exhibited:

- The reader understands that monitoring is a strategy that requires him or her to rethink and question what has been understood (knowledge function).
- The reader recognizes why the monitoring strategy should be used and the appropriate times to use this strategy during the reading (executive function).

- The reader is able to utilize the text content in order to use the monitoring strategy (procedural function).

This reader understands how to use the monitoring strategy when there might be a contradiction within the text or a breakdown in his or her comprehension (Israel et al., 2005).

Table 2 presents an overview of the behaviors students exhibit for each of the three primary functions of metacognition. This table will help teachers identify when students are applying metacognitive functions. It is important for teachers to be able to identify these metacognitive functions as students exhibit them so that they can have a better understanding of how to interpret and apply the appropriate metacognitive assessments and strategies with their students. In addition, knowing the functions of metacognition will help place the developmental levels of metacognition into perspective with appropriate strategies that can be taught.

Metacognitive Strategy Utilization

Metacognitive strategies used to aid reading comprehension can be divided into three types: planning strategies (P), monitoring strategies (M), and evaluation

Table 2. Student Behaviors When Utilizing Metacognitive Functions

Behaviors Demonstrating the Knowledge Function	<ul style="list-style-type: none"> • Student is aware of strategies being used. • Student senses when there is a comprehension breakdown and makes an effort to correct. • Student is aware of reading habits. • Student understands the reading tasks and the necessary cognitive abilities to process text.
Behaviors Demonstrating the Executive Function	<ul style="list-style-type: none"> • Student understands when and why a specific strategy should be used and uses it. • Student executes task relevant strategies. • Student monitors use of strategies. • Student can explain which strategies he or she is using and why he or she is executing these strategies.
Behaviors Demonstrating the Procedural Function	<ul style="list-style-type: none"> • Student understands how to perform the various strategies involved. • Student performs strategies that help improve success with the task. • Student is able to model strategies for other students.

strategies (E) (Pressley & Afflerbach, 1995). This metacognitive reading framework should be familiar to teachers who integrate before-, during-, and after-reading processes when teaching students effective comprehension strategies (Pressley & Afflerbach, 1995).

Planning Strategies

Planning strategies are metacognitive strategies that the reader does early on in the reading process—before reading—to increase reading comprehension. The following planning strategies are utilized by metacognitive readers **before** reading:

- Activating Prior Knowledge
- Overviewing Information in the Text
- Relating Text-to-Text
- Relating Text-to-Self

Monitoring Strategies

Monitoring strategies—usually occurring during the reading of a text—help the reader pay attention to meaning construction as well as correct breakdowns in comprehension. The following monitoring strategies are utilized by metacognitive readers **during** reading:

- Determining Word Meaning
- Questioning
- Reflecting
- Monitoring
- Summarizing
- Looking for Important Information

Evaluating Strategies

Evaluation strategies—used after reading—allow the reader to think critically about the text and make a cognitive or affective judgment. The following evaluating strategies are utilized by metacognitive readers **after** reading:

- Thinking Like the Author
- Evaluating the Text
- Anticipating Use of Knowledge

CLASSROOM SCENARIO: Attending to Students Who Lack Engagement With Text

A student in your class is not reading the required text. You suspect that he might be having difficulty paying attention to what he is reading because he is unable to relate to the topic and therefore does not engage with the text. As a teacher, you want to understand why he is not reading, and the student explains to you that he does not understand the text because he does not know anything about the topic.

Sit with him and a small group of other students who might also be having trouble and model for them how you would use some planning strategies prior to reading. For example, one often overlooked metacognitive strategy is *Overviewing Information in the Text* before reading. Model for students how to look over the book to get an idea what the book is about and how to look for important information in the book and explain why you think this information might be important to know or remember. In addition, point out text features, such as the table of contents, index, any information about the author, and the publication date. Then model the *Activating Prior Knowledge* strategy by discussing with the students any prior experiences you might have with the text and help students understand how important it is to activate their prior knowledge. Trying new strategies and making this student and other students feel like their experiences are important is key to getting students' attention.

Understanding Metacognitive Strategies Effective at Developmental Stages

Teachers should understand that development plays a key role in metacognition (Samuels, Ediger, Willcutt, & Palumbo, 2005). This is important because, in order for students to develop metacognitive strategies, teachers need to be attentive to students' literacy learning levels and reading abilities so that they can teach metacognitive strategies suited to students' individual ability levels. Using metacognitive assessments will help teachers understand students' metacognitive abilities in order to guide students to increased levels of automatic metacognitive strategy utilization.

Even at the preschool and elementary school level, children are already developing metacognitive strategies by asking questions. Young children's natural inquisitiveness helps them make sense of their world. Therefore, parents play a large role in the initial development of strategy utilization. When reading stories to children, parents often ask the child questions about the book, and in return, the child also asks questions. Sometimes the questions might seem irrelevant to the text,

but young children attempt to place the content of the story within the context of their personal experiences or knowledge base. Children activate schema, which is important when developing metacognitive strategies, and by reflecting on prior experiences, children develop metacognitive thinking.

Therefore, one way teachers and parents of young learners can help develop their metacognitive thinking is to use a one-question assessment strategy: Why? Constantly asking children to explain their thinking helps them develop connections with their prior knowledge and experiences. As children begin to read on their own, they will ask themselves “why” questions automatically.

In the upper elementary grades, students begin to develop good reading behaviors. Through reading experiences and opportunities to learn metacognitive strategies, they can increase their levels of reading comprehension ability. They are capable of using strategies more independently without teacher prompting when given the opportunity to do so. Organization of text structures is very important to readers at this level. In addition, readers will always ask questions about why this information is important to them or why they should do the required task. Although this might appear to be complaining, the reader is actually activating a metacognitive strategy of evaluation. He or she wants to know what value the information will have in the future.

In summary, in the primary grades “other regulation” leads to “self-regulation.” Self-regulation leads to the development of the metacognitive ability to self-assess. If children are taught when, where, and why particular strategies for word recognition are valuable, students can begin to develop the foundational literacy skills that will lead to metacognitive-oriented reading. If students are having problems with reading comprehension, encouraging the application of metacognitive strategies can help to provide pathways to self-correction during oral and silent reading. In addition, teaching children to reflect on the processes and strategies they use before, during, and after reading will also help developing or less proficient readers understand the mental processes used when making sense of text. Even as early as the preschool years, children use strategies they understand and can verbalize how to use them. Reading research on metacognition has helped educators at all levels understand what types of strategies we can expect students to be capable of learning.

Table 3 offers a summary of the metacognitive strategies that can be developed and enhanced through instruction in the primary and upper elementary grades. The table illustrates that metacognitive strategies can be taught at all levels, although at varying degrees of intensity.

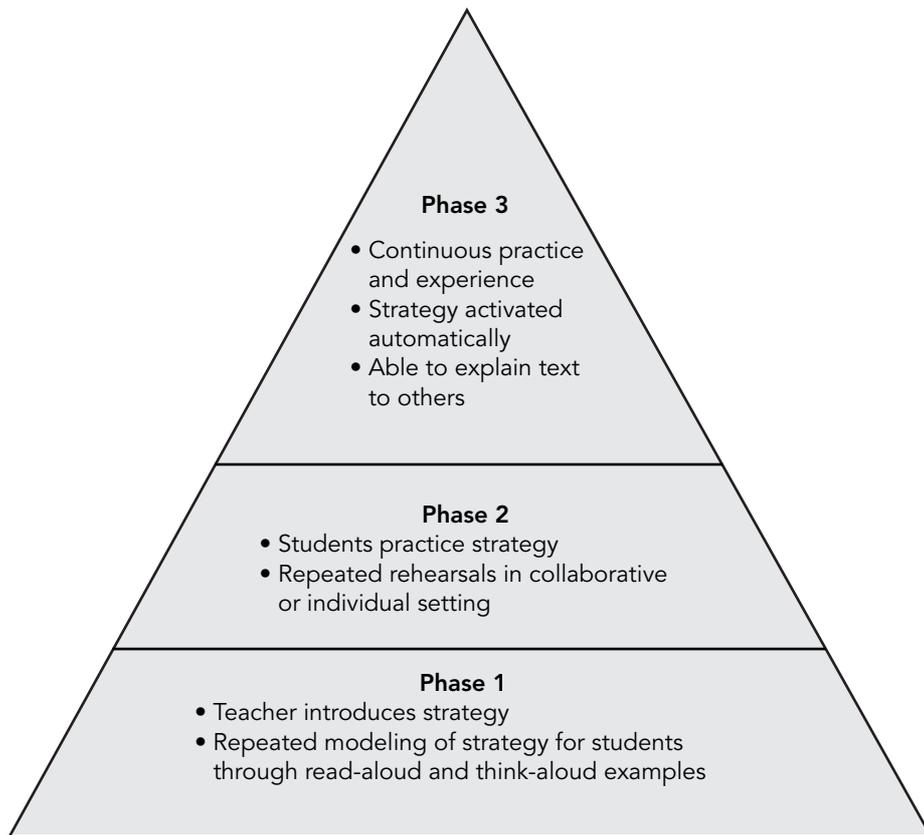
Table 3. Summary of Metacognitive Strategies by Level

Level	Type	Metacognitive Strategies
Primary Grades	Planning	<i>Activating Prior Knowledge:</i> Relating text to reader's own prior life experiences and knowledge <i>Overviewing Information in the Text:</i> Overviewing the text to make sense of the topic, format, and key concepts
	Monitoring	<i>Determining Word Meaning:</i> Identifying terms or concepts that might be confusing <i>Questioning:</i> Asking questions while reading and questioning the information presented, such as Why? and How does this make sense? <i>Reflecting:</i> Reflecting on textual elements or things that puzzle them
	Evaluating	<i>Thinking Like the Author:</i> Beginning to understand authors' perspectives <i>Evaluating the Text:</i> Beginning to analyze texts by expressing thoughts such as "I like this because..."
Upper Elementary Grades	Planning	<i>Relating Text-to-Text:</i> Comparing ideas within the text for consistency and activating prior knowledge of texts <i>Relating Text-to-Self:</i> Using information in the text to activate prior experiences
	Monitoring	<i>Monitoring:</i> Understanding when there is breakdown in comprehension and using fix-up strategies to correct <i>Summarizing:</i> Stating key concepts or events from the text <i>Looking for Important Information:</i> Finding important information in the text that will aid in increased levels of understanding, activation of prior knowledge, and increased concentration based on the perceived levels of importance to reading goals
	Evaluating	<i>Anticipating Use of Knowledge:</i> Understanding how to use knowledge in the future <i>Evaluating the Text:</i> Thinking about how this text made you feel (e.g., asking yourself, Was the information valuable to you? How can you use this information in the future. Would you recommend this to someone else and if so, why?)

Phases for Introducing Metacognitive Reading Strategies in the Classroom

There are three phases of how metacognitively oriented reading strategies can be introduced in order to increase internalization of strategies. Figure 1 explains the three phases of instruction that lead to metacognitively skilled readers. Teachers can follow the phases when introducing metacognitive strategies.

Figure 1. Phases of Metacognitively Oriented Reading Instruction



Phase 1

After being first introduced to a strategy, students are not yet able to use it spontaneously. A common pitfall of strategy instruction is that teachers may expect students to learn a strategy that has only been presented once. Students need to feel confident about strategy utilization. Increase confidence levels by repeated introductions in a variety of situations.

Phase 2

In this phase, students are able to use the strategy with practice, but they do not initially benefit from the strategy. Teachers should not assume that, with only a little practice and successful demonstration on a worksheet, the student has acquired the skill. I have seen many exemplary teachers avoid sending homework home on the first day after a new strategy has been introduced.

Phase 3

It is not until the third phase on the learning continuum and after students have had considerable practice and experience with using the strategy that spontaneous utilization occurs. At this phase, students are closer to being metacognitively skilled readers and will feel more confident about doing practice exercises.

CLASSROOM SCENARIO: Transferring Strategies Across Text Types

A student in your class successfully demonstrates the utilization of a metacognitive reading strategy when reading a fictional text but is unsuccessful at transferring the strategy when reading in nonfiction textbook in science class. How can you change your instruction or selection of read-alouds to help students learn how to transfer strategies from one text type to another?

If a student is having trouble applying the strategies to nonfiction text, evaluate the types of text being used during your read-aloud experiences to model strategy utilization. If you are only using fiction text, you should incorporate more nonfiction text (illustrating Phase 1 of introducing students to metacognitive reading strategies). In addition, you should practice using a variety of text types with students (illustrating Phase 2). You can monitor strategy utilization by evaluating reading comprehension using metacognitive assessments in chapters 3 through 5 of this book (illustrating Phase 3).

Conclusion

This chapter provides the foundational information needed to develop a solid understanding of the meaning of metacognition, how metacognition is related to reading instruction, and the functions of metacognition. In addition, this chapter introduces key metacognitive strategies used by effective readers and the different stages at which these metacognitive strategies can be introduced. Now that you are equipped with a solid background on metacognition and metacognitive reading strategies, you are ready to move on to chapter 1, in which you will be introduced to metacognitive assessments and the purposes and benefits of metacognitive assessments.

Resources to Enrich Your Understanding

I first encountered the concept of metacognition in the book *Mosaic of Thought* (Keene & Zimmermann, 1997). I have used this book in my classes as a book

study selection, and it is always one of the more popular choices for both undergraduate and graduate students. Even though the book was written in 1997, reading educators will find the text to be inspiring, as well as a motivation for instructional change. If more information is needed on any of the topics or research in this chapter, I recommend reading *Metacognition in Literacy Learning* (Israel, Block, et al., 2005). A valuable chapter in this book that discusses developmental differences is “Developmental Differences in Metacognition: Implications for Metacognitively Oriented Reading Instruction.” More and more teachers are using picture books as tools for increased literacy development. Two of my favorite picture books that emphasize metacognitive thinking use creative language to get kids thinking. When I traveled to Ireland during the summer of 2004, I asked the bookstores what their bestselling picture book is, and I was given *The Gruffalo*, by Julia Donaldson (1999). This book was awarded the Smarties Book Prize in Ireland for outstanding literature. The story begins, “A mouse took a stroll through the deep dark wood. A fox saw the mouse and the mouse looked good.” Teachers at all levels can use this book to teach monitoring strategies. The story is so good that children will immediately request a reread to confirm comprehension. Kaethe Zemach (1998) wrote an excellent story titled *The Character in the Book*. Because the story is written in the character’s perspective, children need to think metacognitively.