International Journal Of English and Studies(IJOES)

_____

Deconstructing Metacognitive Paradigms: A Critical Analysis of Theoretical Frameworks and Cognitive Architectures

_____

Shetty Sinduja

Research Scholar, Dept. of English, Kakatiya University, Hanamkonda

_____

Abstract: This study presents a critical examination of various theoretical frameworks and cognitive models related to metacognition. By analyzing foundational and contemporary perspectives, the research aims to unravel the complexities of metacognitive processes and their underlying cognitive structures. The paper explores how different models conceptualize metacognition, including its components such as self-regulation, monitoring, and control of cognition. It also critiques the strengths and limitations of these frameworks in explaining metacognitive functioning across diverse learning contexts. Through this research study, it seeks to contribute to a deeper understanding of metacognitive theory, highlighting gaps and proposing directions for future research.

Keywords: Metacognition, model of metacognition, thinking skills

Introduction: Metacognition means thinking about one's own thinking. It is very important for teaching students how to learn and develop useful skills. It helps students understand ideas more deeply (Zohar and Barzilai, 2013). Teachers need to use metacognition themselves and also help their students grow their metacognitive skills to teach well. When teachers use metacognition, they can plan their lessons, teaching methods, and tests better. They can also think carefully about what they teach, why they teach it, and how they do it. Students who learn to use metacognitive strategies can understand, remember, and use difficult ideas and skills more easily. This is especially important for improving the problem-solving skills and learning results of the students. While metacognition offers great promise for improving learning, especially among disadvantaged students, it requires ongoing support and training for both teachers and students. Without proper guidance, students might find metacognitive strategies confusing or hard to use effectively. Indeed, the success of metacognitive teaching depends on adapting strategies to fit the students' cultural and socio-economic contexts. Therefore, educational policies must focus not only on introducing these strategies but also on providing the resources and environment needed for their real impact to be realized.

The word "metacognition" was first introduced by the American psychologist John Flavell in 1976. Metacognition means thinking about your own thinking or higher-level

_____

thinking. Many studies have explained metacognition in different ways (Sandi-Urena, 2011). Recent human-computer interaction studies have analyzed metacognitive aspects of learning texts on screen versus on paper and provided insights regarding media effects on cognitive processing (e.g., Lauterman and Ackerman, 2014). If we say cognition is the different learning skills students use to do a task, then metacognition is being aware of those skills and thinking about how to use them. Flavell (1979) described metacognition as: (a) knowing about how people think, (b) knowing about the tasks they do, (c) knowing different strategies to solve tasks, and (d) being able to watch and control one's thinking activities. He explained that metacognition involves knowing and managing how we think when learning, such as choosing the right strategy for the task. Allen and Armour-Thomas (1993) also said metacognition means knowing about and controlling your thought processes. Although metacognition is widely accepted as an important part of learning, it is often misunderstood in many classrooms. Simply knowing about metacognition does not guarantee that students or teachers can use it well. Developing metacognitive skills requires practice, guidance, and a supportive environment. Moreover, the complexity of metacognitive processes makes it difficult to teach or measure accurately. Without proper tools and understanding, efforts to improve metacognition may fall short, especially in under-resourced educational settings. Therefore, more research is needed to find effective ways to help learners and educators apply metacognitive principles in real-world learning.

Metacognition is one of humans' sophisticated cognitive capacities, and it could be uniquely human (Metcalfe and Kober, 2005). Metacognition can be divided into three parts:
1. Metacognitive knowledge: What a person knows about how they learn or think.
2. Metacognitive skill: What the person is doing while they are learning or thinking.
3. Metacognitive experience: **H**ow the person feels or what they are thinking at that moment.

Other researcher Brown (1987) explained that metacognition has two main parts: knowing how thinking works (knowledge of thinking), and using that knowledge to control or manage thinking. While this classification helps us understand metacognition better, it also shows how complex the concept is. The three parts "knowledge, skill, and experience" are deeply connected, and it's not always easy to separate them clearly in practice. Furthermore, many learners may be unaware of their metacognitive processes, especially if they are not taught how to reflect on or guide their thinking. In classrooms, teachers often focus more on content than on teaching students how to think about their learning. This gap makes it essential to include metacognitive instruction as a part of everyday teaching. If students are not trained to monitor and regulate their learning processes, they may struggle with deep understanding and long-term retention of knowledge.

Metacognition is very important because it affects how we learn, understand, remember, and use knowledge. It also helps us learn more effectively, think critically, and solve problems better. Being aware of our thinking is called metacognitive awareness which helps us taking control of how we learn and think. With metacognition, students can take charge of their studies, choose the right strategies, and change their approach when

International Journal Of English and Studies(IJOES)
_____

something isn't working. Teachers, too, must develop their own metacognitive skills to model these processes for learners. Thus, the integration of metacognitive instruction in school curricula is not just beneficial—it is necessary for creating independent, lifelong learners capable of adapting to different learning challenges.

Models of metacognition: Many psychologists have given different models to explain metacognition. In this study, only a few important models that are directly related to the research have been discussed.
1. Flavell's model of metacognition (1979)
2. Brown's model of metacognition (1987)
3. Schraw and Moshman's model of metacognition (1995)
4. Martinez's model of metacognition (2006)

1. Flavell's model of metacognition (1979): According to Flavell (1979), intellectual activities can be monitored via action and interaction among the four basic components: (i) metacognitive knowledge; (ii) metacognitive experience; (iii) cognitive goals; and (iv) cognitive strategies, as shown in the following figure 1.1.
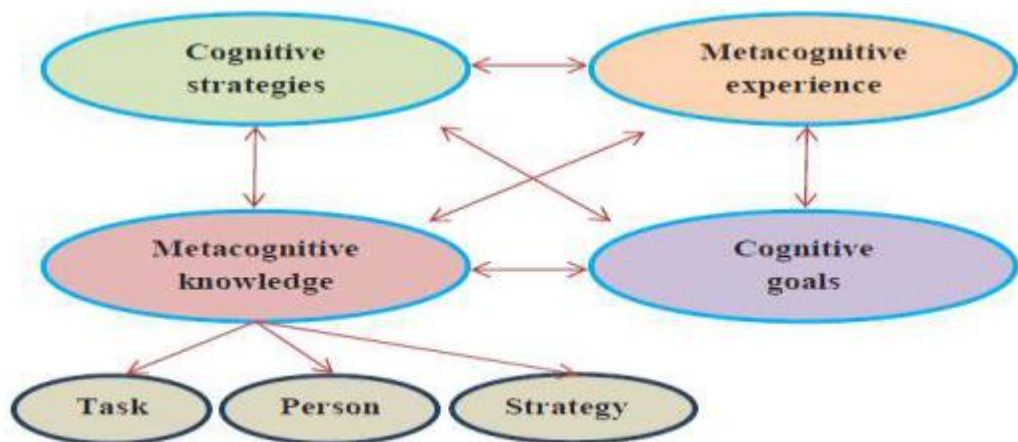
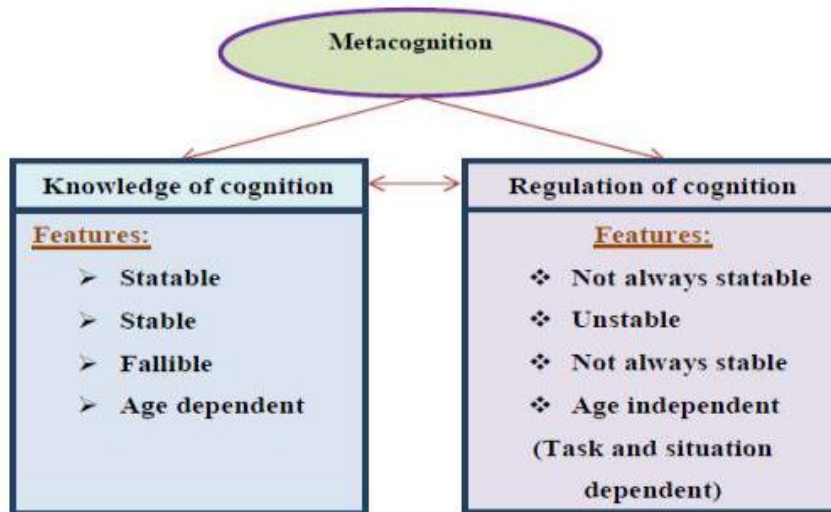Figure 1.1: Flavell's model of metacognition (1979)

In the above image, metacognitive knowledge means a person's understanding of what they can and cannot do. This includes understanding the goal of a task, knowing the content and how long it will take, and being fully aware of which strategies to use. The metacognitive approach puts forward the centrality of subjective judgment of confidence in the success of performing cognitive tasks (Bjork, Dunlosky, & Kornell, 2013).

International Journal Of English and Studies(IJOES)

_____

Metacognitive experience refers to the part of this knowledge that becomes conscious that is, any clear thought or feeling related to thinking or problem-solving. These experiences usually happen when a person is thinking carefully and deliberately. The process and strategy are the tools or methods people use to reach their goals or complete a task. The effectiveness of strategies depends on individual learners' awareness and motivation, which are influenced by various socio-cultural and emotional factors. It is essential, therefore, for educators to move beyond theoretical explanations and guide students through regular practice and reflection so they can internalize and actively use metacognitive processes in their learning journey.

2. Brown's model of metacognition (1987): In 1987, Brown introduced a detailed model of metacognition, shown in Figure 1.2. It includes two main parts: knowledge of cognition and regulation of cognition.
1. Knowledge of cognition is what a person knows about how they think and learn. It includes being aware of their own thinking process.
2. Regulation of cognition means managing or controlling how one thinks. It involves the actions a person takes to guide and improve their thinking and learning.

While Brown's model provides a clear framework for understanding how learners can think about their own learning, applying it in real classroom settings can be challenging. Many students lack the maturity or guidance needed to monitor their own thinking effectively. Moreover, regulation of cognition requires not just awareness but discipline and persistence—qualities that need to be nurtured over time. Educators must scaffold these skills, especially for students from under-resourced or disadvantaged backgrounds, by embedding metacognitive training into everyday lessons. Only then can students begin to gain real control over their own learning processes.

International Journal Of English and Studies(IJOES)

_____

Figure 1.2: Brown's model of metacognition (1987)

Brown highlighted the important difference between knowledge of cognition and regulation of cognition. He believed that "metacognition is the foundation of the learning process" and plays a key role in a person's development. According to Brown, regulating one's thinking depends on both age and the situation. This means that people can manage their thinking processes, but how well they do it can change depending on their age and the learning context. Regulation of cognition is not always steady or predictable. It helps a learner to estimate how well they are learning, plan the best strategies to meet their goals, and keep track of their progress through activities like testing and retesting.

Brown's distinction between knowing how we learn and actually controlling our learning is vital for educators and researchers. While metacognitive knowledge can be taught through awareness-building exercises, true regulation demands practice, reflection, and adaptability skills that often develop with maturity and experience. His view that regulation is context- and age-sensitive reminds us that younger learners or those in unfamiliar environments may struggle more with applying strategies effectively. Therefore, educational systems must not only teach students what metacognition is but also support them in when and how to apply it in varied learning situations. This makes metacognitive training a long-term developmental goal rather than a one-time instructional event.

3.   Schraw and Moshman's model: Schraw and Moshman's model is one of the most influential frameworks in metacognitive theory because it breaks down the abstract concept of "thinking about thinking" into practical parts that can be observed, taught, and evaluated. Their distinction between declarative, procedural, and conditional knowledge gives teachers and learners a clearer understanding of how metacognition works in real-life situations. But, a major challenge lies in helping students move beyond just knowing about these components

International Journal Of English and Studies(IJOES)

_____

to actually using them effectively during learning. This calls for intentional classroom practices where students are not only encouraged to reflect but are trained to monitor and adjust their learning strategies. Moreover, the model's emphasis on self-regulation highlights the learner's active role in shaping their own academic success, making it highly relevant in outcome-based and student-centered education systems.
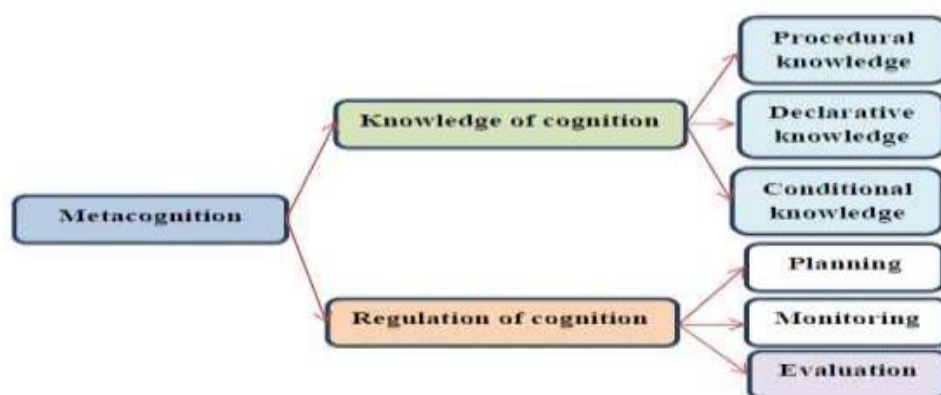
Figure1.3: Schraw and Moshman's model of metacognition (1995)

Knowledge of cognition—also called metacognitive knowledge—means understanding how your own mind works. A person who has this kind of knowledge can identify their strengths and weaknesses in learning. This knowledge is divided into three main types:

1.   **Person variable** (Declarative knowledge): Knowing facts about yourself as a learner, such as what subjects you are good at or where you struggle.
2.   **Task variable** (Procedural knowledge): Knowing how to do a task by using the right methods or strategies.
3.   **Strategy variable** (Conditional knowledge): Knowing when and why to use a certain method or strategy based on the learning situation.

Declarative knowledge helps a person become aware of their abilities. Procedural knowledge is about knowing how to apply the right methods to complete a task effectively.

This classification of metacognitive knowledge is important because it shows that knowing facts is not enough for learning success. Learners also need to know how and when to apply their knowledge. In many traditional classrooms, teaching often stops at declarative knowledge—students are told what to know. But for true academic growth, students must also develop procedural and conditional knowledge. Without these, they may fail to apply their knowledge effectively, especially when facing new or difficult problems.

Conditional knowledge means a person clearly understands when, why, and how to use a particular learning strategy (Flavell, 1979). It helps learners decide the best approach depending on the task or situation.

# International Journal Of English and Studies(IJOES)
_____

On the other hand, the regulation of cognition—or how people control their own thinking—includes three important steps:
1. **Planning** – deciding what to do before starting a task.
2. **Monitoring** – checking how well the learning is going while doing the task.
3. **Evaluating** – judging how well the task was done after finishing it.

So, a student who has good metacognitive knowledge can choose the right learning strategies and use them properly in real-world learning situations. The ability to plan, monitor, and evaluate not only builds confidence but also prepares students for challenges beyond the classroom.

4. Martinez's model of metacognition (2006): Martinez's model plays a vital role in shaping not just what we learn, but how we learn. It shifts the focus from passive learning—where students merely absorb information—to active learning, where they are aware of their thoughts and take responsibility for their learning process. In classrooms, where teaching often remains content-driven, the importance of thinking about one's thinking is usually overlooked. Martinez's emphasis on self-regulation is particularly valuable in today's education, where students must become independent, reflective, and strategic learners. This model has strong implications for teacher training as well. Teachers need to develop their own metacognitive skills to guide students effectively. Without the awareness and application of such skills, both teaching and learning risk becoming mechanical and superficial.
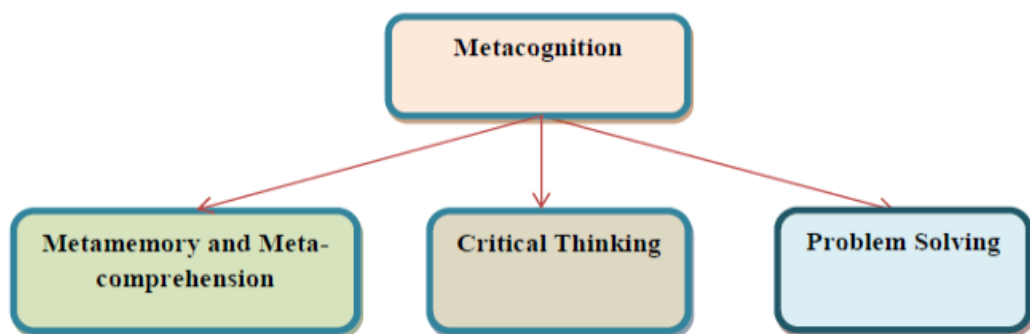
Figure 1.4: Martinez's model of metacognition (2006)

Meta-memory and Meta-comprehension: Meta-memory refers to "learners" knowledge and awareness about their own memory capacities and strategies." Learners' abilities to monitor their understanding and information processing and identify the weaknesses regarding their failure to understand a particular concept.

International Journal Of English and Studies(IJOES)

_____

a) **Meta-memory** means how well learners know and understand their own memory skills and the ways they use to remember things. It's about being aware of how good their memory is and which memory techniques work best for them.

b) **Meta-comprehension** is when learners check how well they understand what they are learning. They notice if they don't understand something clearly and try to figure out why.

Teachers need to encourage students to reflect on their memory and understanding regularly. Building these metacognitive skills can help students become more effective learners who can spot their weaknesses early and fix them, rather than just memorizing information blindly. Without such self-awareness, learning remains shallow and less meaningful.

Critical thinking is the ability to carefully and fairly look at information without bias. It means being open-minded, active, and well-informed. It also involves being willing to ask questions or have doubts, thinking independently, and understanding how values, peer pressure, and media can influence us. Critical thinking means clear and logical thinking that helps learners understand how their ideas connect. It helps students improve their ideas by evaluating them carefully. External influences like peer pressure and media can distort learners' ability to think critically if they are not trained to recognize and resist such pressures. Teachers should focus more on developing critical thinking skills to help students become independent thinkers who can make informed decisions, rather than passive learners who accept information without question. Without nurturing critical thinking, education risks producing learners who struggle to solve real-world problems creatively and logically.

Problem solving: It means being able to find the important information when there is a lot of data, most of which is not useful. It also means ignoring information that does not help, and using experience to connect new problems with ones we have solved before. Critical thinking and problem solving work together and are part of metacognition. Problem solving means trying to reach a goal when you don't know the exact way to get there. It follows careful, scientific steps, especially in teaching and research. The information we receive is often confusing or misleading, so the ability to pick out what is useful is becoming harder but more necessary. Schools and teachers need to do more to help students develop these skills, so they can handle complex problems and make better decisions in uncertain situations. Without proper guidance, students may fail to develop these essential skills, limiting their ability to succeed in both academics and everyday life.

Works Cited:
Allen, B. A., and Armour-Thomas, E. (1993). Construct validation of metacognition. *The Journal of Psychology*, *127* (2), 203-211.
Bjork, R. A., Dunlosky, J., & Kornell, N. (2013). Self-regulated learning: Beliefs, techniques, and illusions. *Annual review of psychology, 64*, 417-444.
Brown, A. L. (1987). Metacognition, executive control, self-regulation, and other mysterious

International Journal Of English and Studies(IJOES)

mechanisms. In F.E. Weinert and R.H. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 65-116). Hillsdale: Lawrence Erlbaum.

Flavell, J. H., (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American Psychologist*, 34(10), 906-911.

Lauterman, T., & Ackerman, R. (2014). Overcoming screen inferiority in learning and calibration. *Computers in Human Behavior, 35*, 455-463.

Metcalfe, J., & Kober, H. (2005). Self-reflective consciousness and the projectable self. In H. S. Terrace & J. Metcalfe (Eds.), *The missing link in cognition: Origins of self-reflective consciousness* (pp. 57-83). New York: Oxford University Press.

Sandi-Urena, S., Cooper, M. M., & Stevens, R. H. (2011).Enhancement of metacognition use and awareness by means of a collaborative intervention. *International Journal of Science Education*, 33 (3), 323-340.

Zohar, A., & Barzilai, S. (2013). A review of research on metacognition in science education: current and future directions. *Studies in Science Education*, 49(2), 121-169.