



Understanding Metacognition: A Critical Analysis

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Abstract: *The awareness and comprehension of one's own mental processes, or metacognition, is essential to learning, problem-solving, and cognitive development. The purpose of this essay is to present a thorough introduction and critical evaluation of the idea of metacognition. Its description, elements, theoretical underpinnings, and relevance in a range of fields, including psychology, education, and daily living, are all covered in the review. The investigation explores the distinctions between metacognitive knowledge and metacognitive regulation, highlighting the ways in which they interact to improve learning techniques and self-control. This research also looks at the difficulties in measuring and developing metacognitive capabilities, emphasising the necessity for specialised interventions to develop metacognitive abilities. The sum of the available data indicates that improving learning outcomes and cognitive function requires a deeper comprehension of metacognition. However, further empirical studies are warranted to elucidate the intricate mechanisms and practical applications of metacognition.*

Key Words: *Problem Solving, Critical Evaluation, Metaregulation, Intervention Capabilities.*

1. INTRODUCTION :

Metacognition describes processes involved when learners plan, evaluate, monitor and change their learning behaviors.

What does metacognition mean?

The prefix 'meta' means 'about' the thing itself. So, metacognition is 'cognition about cognition', or 'thinking about one's thinking'. It is often considered to have two dimensions: metacognitive knowledge and metacognitive regulation.

Metacognitive knowledge includes the learner's understanding of their cognitive abilities (e.g. I have trouble remembering dates), the learner's knowledge of the nature of a particular task, and the learner's understanding of different strategies, including when to use these strategies (e.g. if I break telephone numbers into chunks I will remember them)

How students monitor and manage their cognitive processes is known as metacognitive regulation. For instance, they were trying a different approach after realizing that the method they used to solve a mathematical problem was ineffective (Nelson & Narens, 1990). Most scholars credit Flavell, the father of the theory of mind method, with coining metacognition. Flavell described metacognition as "knowledge concerning one's cognitive processes or anything related to them." He suggests that applying the theory of mind to cognitive processes is known as metacognition. The ability to "attribute mental situation, such as desires, beliefs and intentions to self and others" is called the theory of mind. Metacognition is a "theory of self, theory of learning, and learning environments" in addition to a view of mind. According to Flavell, learners who are aware of their mental and executive processes engage in metacognition to regulate any part of their cognitive activity. He further developed metacognition as having four components: objectives, the activation of strategies, metacognitive information, and metacognitive experiences. He maintains that metacognition encompasses three domains: metacognitive knowledge, metacognitive experiences, and metacognitive strategies.



Flavell structured it into two dimensions to capture the cognitive aspect of the construct and the regulation of understanding of metacognition and regulation of metacognition. This notion is used to operationalize metacognition in many research projects.

2. Metacognition Theories :

In all situations, including multilingual societies, metacognition has been widely accepted as an important tool for lifelong learning. Researchers have focused more on the relationship between metacognition and proficient language learners. Investigations indicate that metacognitive knowledge favours learner autonomy, self-regulated learning, academic performance, and the quality and efficacy of academic education. Fairbanks believed that educators are more equipped to assist their students' growth when they recognize the importance of metacognition for learning. In the 1970s, most research on the development of cognitive abilities focused on children's metamemory—their understanding of person, task, and strategy variables. Subsequently, scholars studying the theory of mind have looked into young children's preliminary metacognitive understanding or comprehending that mental states, such as intents and desires, exist. Understanding the theory of mind has enabled researchers to focus on cognitive processes relevant to tasks to enhance task performance and track improvement. Thus, "knowledge about knowledge," "thoughts about thoughts," or "reflections about actions" are ways to characterize metacognition. The two are not identical in metacognition. The scientific study of a person's perceptions of their mental processes is called metacognition.

Cognition examines the memory, focus, language comprehension, reasoning, learning, problem-solving, and decision-making skills of Metacognition learners. The study of an individual's cognitive process is known as metacognition, which has numerous aspects. "Domain-general knowledge and regulatory skills that enable individuals to control cognition in multiple domains" are what metacognition offers. An individual's awareness of and reflection on their experiences, knowledge, emotions, and learning across all domains can also be interpreted as metacognition. Moreover, Flavell differentiates between cognitive and metacognitive tasks. While the former entails the need to know, comprehend, recall, process, and engage in more complex mental activities, the latter involves learners planning, reflecting, monitoring, and determining their learning processes, such as planning and executing tasks. Flavell suggested that person, study, and strategy knowledge comprised metacognitive knowledge. Wenden described personal knowledge as an individual's knowledge about their cognitive processes or awareness and understanding of their strengths and weaknesses in specific knowledge or skill areas. Any possible factors, including age, language aptitude, and motivation, may impact a person's knowledge. Wenden also described task knowledge as the knowledge essential to the understanding of task purpose and demands. Likewise, strategy knowledge concerns strategies that are likely to be effective for individuals to achieve task goals. Other researchers follow a framework in which metacognitive knowledge is divided into three types according to their processes, i.e., declarative, procedural, and conditional.

Declarative knowledge is factual data about one's abilities, aptitudes, dynamic elements, and cognitive capacities. Metalinguistic awareness, defined as "the capacity to view language as an object of research as well as a tool for idea expression and interpersonal communication." is another term for gaining declarative knowledge. Metalinguistically aware learners can nurture language awareness, developing metalinguistic awareness. "Explicit knowledge about language, and conscious perception and sensitivity in language learning, language teaching, and language use" are all regarded to be parts of language awareness. A component of declarative metacognitive knowledge is explicit information on language learning strategies.

Procedural knowledge influences how someone chooses a task by utilizing the right tactics. Learning to swim is an example of procedural knowledge. Regardless of what the instructor says, a learner frequently finds it difficult to understand the task until after several attempts. After practice and learning, the mission soon developed into implicit knowledge, which is knowledge that is stored in the mind implicitly and is difficult to express. An individual's ability to choose when, where, and why to apply particular strategies to achieve appropriate duties is known as conditional knowledge.

Conditional knowledge is essential for effectively selecting strategies and allocating resources. In second language learning, dependent ability allows the learner to be a guide to determine when and how systems can be used to complete a task. In line with Flavell, it also suggests metacognition comprises three domains, i.e., metacognitive knowledge, metacognitive experiences, and metacognitive strategies. In her view, metacognitive experiences refer to individuals' awareness of and feelings when processing information for a task. In particular, the consistency and judgments of knowing, effort expenditure, solution correctness, difficulties, familiarity, and confidence are all domains in metacognitive experiences. Metacognitive experiences are the basis for an individual's awareness of task performance. Efkliides included metacognitive knowledge and metacognitive experiences as the monitoring function and metacognitive skills as the control of cognition. Metacognitive experiences were originally juxtaposed with metacognitive knowledge by Flavell.



Learners undergo metacognitive experiences as they engage in learning activities, and learners' subjective and affective experiences influence their metacognition. For example, learners' emotions, either positive (e.g., satisfaction or confidence) or negative (e.g., boredom and anxiety), may impact their willingness to use the strategy in the future. Such experiences may, in turn, affect their metacognitive knowledge. Metacognitive experience is an essential component in the context of classroom instruction, where learners experience a variety of emotions. Metacognitive skills were also described as metacognitive regulation by Shimamura. Metacognitive skills included planning, conflict resolution, error detection, and inhibitory control. Metacognitive control refers to modifying one's thoughts through editing, drafting, idea generation, word production, translation, and revision. Metacognitive skills also include orientation, planning, cognitive processing, monitoring, and evaluation strategies. Brown suggested that metacognitive regulation is somewhat different from metacognitive skills; metacognitive regulation is defined as how individuals identify distracting internal and external stimuli to sustain effort over time for executive functions.

Schraw suggested that metacognitive regulation entails three skills: planning, monitoring, and evaluating. Planning refers to an individual's ability to select and allocate strategies and resources for completing relevant tasks. In contrast, monitoring is an individual's ability to observe, check, and appraise the performance of a particular task. Evaluating is the individual's ability to assess their regulatory processes and learning products. Schraw and Dennison added debugging and information management strategies, two essential metacognitive strategies. Debugging methods refer to an individual's ability to modify comprehension and performance errors. Information management strategies refer to an individual's skills in processing, organizing, elaborating, and summarizing information for a particular task.

3. What Are The Benefits Of Metacognition?

Metacognitive practices help learners plan, monitor, and evaluate their progress and take control of their learning style as they read, write, and solve problems in the classroom.

Research indicates that metacognition is a powerful predictor of learning. Metacognitive practices uniquely contribute to learning over and above the influence of cognitive ability. This research implies that improving a learner's metacognitive practices may compensate for any mental limitations they may have

Metacognitive practices have improved academic achievement across ages, cognitive abilities and learning domains. This includes reading and text comprehension, writing, mathematics, reasoning and problem-solving, and memory.

Metacognitive skills can help students transfer what they have learned from one situation to another or from a previous task to a new study. The teacher can support this by explaining how what has been known from one lesson can be applied to the next.

4. How Can Schools Make The Best Use Of Metacognition?

Priorities professional development in metacognition. There should be an explicit focus on teaching cognitive and metacognitive techniques and creating a learning environment that supports the development of metacognitive skills and motivation. Encourage teachers to collaborate and share practice that promotes the development of metacognitive abilities in the classroom. For example, a group could meet regularly to reflect on reading about metacognition or to share their experiences of implementing a new strategy.

Support teachers in encouraging metacognitive practices at school. For example, exam wrappers are worksheets that learners complete before and after they receive test feedback. These include questions to help learners reflect on planning, monitoring, and evaluation processes when preparing for and taking the test.

Embed metacognitive strategies in high-quality subject teaching rather than as decontextualized generic skills training. Involve the whole school community in promoting metacognitive talk. Monitoring and evaluating performance and using learning strategies effectively is helpful in the classroom, the broader school, and beyond. Evaluate the impact of implemented new strategies, whether these are tried across the whole school or by individual teachers or departments (see Getting Started with Evaluating Impact).

5. What are the misconceptions of metacognition?

Metacognition is always deliberate. Many metacognition researchers highlight the conscious, calculated nature of metacognition. An alternative approach is that less conscious, automatic processes are also metacognitive. For example, a learner may check work for errors as they write, out of habit, with little awareness that they are doing so until a mistake is identified. The notion of automatic or implicit metacognition may need help distinguishing cognitive from metacognitive processes. However, it has led to more sophisticated models of metacognition, particularly in the area of metacognition in young children.



Metacognition is for older students. In contrast to the view that metacognitive skills emerge at the age of 8 to 10, many studies indicate evidence of young children's metacognitive abilities. Findings include children as young as 18 months demonstrating error correction strategies, 5 to 6-year-old children showing understanding of memory processes, and 3 to 5-year-olds exhibiting a wide range of verbal and non-verbal indicators of metacognitive processes in nursery and reception classrooms. These studies demonstrate that although young children may not be able to describe their metacognitive processes, it does not mean that these processes are not occurring.

6. CONCLUSION :

Metacognition refers to the processes involved in planning, monitoring, evaluating, and changing one's learning behaviours. It consists of thinking about one's thinking and has two dimensions: metacognitive knowledge and metacognitive regulation. Metacognitive knowledge includes understanding one's cognitive abilities, the nature of tasks, and different strategies. Metacognitive regulation involves monitoring and controlling cognitive processes. Metacognition is essential for lifelong learning and is linked to good language learning. Meta-cognition refers to the awareness and understanding of one's own cognitive processes. It involves thinking about thinking, understanding how we learn, solve problems, and make decisions. The conclusion drawn from studying meta-cognition emphasizes its significant impact on learning, problem-solving, and overall cognitive functioning. Here are some key points that summarize the conclusions about meta-cognition.

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