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Metacognition and Mindfulness

Metacognition refers to the ability of thinking about thinking. It is the knowing, the monitoring, regulation and control of thoughts. It supervises the realization and the management of goals. Metacognition involves both executive management and strategic knowledge. Executive management processes involve planning, monitoring, evaluating, and revising one's own thinking processes and products, while strategic knowledge involves knowing what (factual or declarative knowledge), when and why (conditional or contextual knowledge), and knowing how (procedural or methodological knowledge) to control cognitive processes. As stated by H. J. Hartman (2001), "*Both executive management and strategic knowledge metacognition are needed to self-regulate one's own thinking and learning*". While cognitive strategies (i.e. repetition, using imagery for memorization) are used to help us achieve a goal, metacognitive strategies guarantee or evaluate if we have reached that goal. Furthermore, they aid in regulating and overseeing learning. Fogarty, R. (1994). *How to teach for metacognition*. Palatine, IL: IRI/Skylight Publishing. suggests that Metacognition is a process that spans three distinct phases:

1. Develop a **plan** before approaching a learning task, such as reading for comprehension or solving a math problem. (*What am I supposed to learn? What should I do first?*)
2. **Monitor** one's understanding; use "fix-up" strategies when meaning breaks down. (*How am I doing? What information is important to remember? What can I do if I do not understand?*)
3. **Evaluate** one's thinking after completing the task. (*How well did I do? Did I get the results I expected? What could I have done differently? Can I apply this way of thinking to other problems or situations?*)

Such strategies are 'executive' processes and consist of planning and monitoring cognitive activities and their outcome, as well as figuring out how to do a task, and then making sure that the task is done correctly. Through metacognition, we can devote a sufficient part of our mental life evaluating our mental performance and predicting how well (or badly) we can do, have done, or are doing e.g., in a new task or a new social situation. Such processes are typified when we look back and analyze an effort (did I do this task right? Have I forgotten something?), or to remember an instruction or to correctly predict our ability to attain some cognitive goal such as to learn a foreign language or make effective plans in a new situation. Helping us to focus on the ways we process information like with using self-questioning, reflective journal writing, and discussing our thought processes and results with other learners are among the ways learners can examine and develop their metacognitive processes.

Metacognition: a tool for the Eightfold Path

The Buddha created a program of mental purification called the Eightfold Path. The goal of this complex program is to achieve Enlightenment or Awakening. The use of metacognitive as well as cognitive strategies is vital for the successful accomplishment of the Eightfold Path. A learner receives instruction both for the ideas from the Buddha's teachings (i.e. the Right Perspective) and for the necessary skills to capably maintain wholesome thoughts and behaviors through learning the regime of Right: desire, effort, energy, and intention. Once one has monitored and evaluated whether these skills have been correctly learned, it is possible to go forward with increased confidence in oneself and the process as well as the soundness of the program. Another benefit of advancing in the training of mind development is to increase one's ability to collect the ordinarily scattered streams of mental states to create a more concentrated unified one.

A unified mental state inspires open-mindedness and serenity, facilitating our inclination to insight, honesty and objectivity about our intentions. Once the cognitive ability of a unified mental state is reached, the Buddha's program is better assimilated. Any new skill applications need oversight and practice, while previously learned 'right' skills can be generalized to other situations and maintained. In the application of metacognition , one

needs to practice heedfulness, maintain a balanced and watchful mind, and to be monitor oneself in an objective, non-attached mindful manner.

A Mindful Mind

The metacognitive function of the Eightfold Path factor of Right Mindfulness includes not only observation and monitoring, but also the skill of discrimination, refinement, and maintenance between having wholesome vs. unwholesome and skillful vs. unskillful thoughts, feelings, behaviors as well as the integration of skills acquisition with the other right factors. If we neglect mindfulness or monitoring, we can neither ask ourselves the essential questions that promote and maintain wholesome thoughts nor put aside unwholesome ones. Right Effort and Right Mindfulness go together to check the arising of unwholesome thoughts and to develop and promote good ones. If craving, envy, and aggression flare up, we must first diligently monitor them as they arise in our mind and then energetically counteract them by using the strategy of promoting the other side with honesty, benevolence, and kindness. A Mindful person is constantly monitoring his or her thoughts, words, and actions. With Right Mindfulness, we guard against deviating from wholesome thinking and we can, therefore, continue to skillfully do any of the prescribed and necessary interventions to behave virtuously. Consequently, the Buddha recommended that Right Mindfulness be applied to everything we do. In all of our movements, we are expected to remain observant – to be mindful. When we walk, stand, sit, speak, eat, keep silent, and drink, all of the detailed motions that we perform are to be overseen mindfully and ‘wide awake,’ or with full consciousness. The Buddha said “*mindfulness, good monks, I declare, is essential in all things everywhere.*” Pristine mindfulness comprises the balancing of attention/concentration to discipline a wandering mind and awareness/introspection to understand *Kamma*/volition. An example of this is shown by the explanation of the Buddha:

“One is mindful to abandon wrong view and to enter and remain in right view.

This is one's right mindfulness...

One is mindful to abandon wrong resolve and to enter and remain in right resolve: This is one's right mindfulness...

One is mindful to abandon wrong speech and to enter and remain in right speech: This is one's right mindfulness...

One is mindful to abandon wrong action and to enter and remain in right action:

This is one's right mindfulness...

One is mindful to abandon wrong livelihood and to enter and remain in right livelihood: This is one's right mindfulness... ~MN 117

The commentary of a verse in the Dhammapada further explains:

"The wise person is always mindful. Through this alertness he discards the ways of the slothful. The monk, as the seeker after the truth, is frightened of mindlessness because he knows that if one is unmindful, one is caught up in the unending suffering of samsara. Therefore, he forges ahead diligently and mindfully burning away those bonds that fetter people to worldliness."

We clearly see that Right Mindfulness has the function of monitoring in the present moment and, more importantly, self-regulation. H. J. Hartman (2001) has written about these benefits of mindfulness, such as, *"promoting executive-level functioning in detecting when the mind has wandered (meta awareness) further reduces lapses in attention. Mindfulness practice promotes a form of meta-cognitive insight of learning to emotionally disengage from distracters (frustration; anxiety). This form of top-down cognitive control leads the Mindfulness practitioner to more readily focus on the present task leading to better performance."*³In fact, often in the Dhammapada the word 'heedfulness' or 'heedful' - which means having or showing a close attentiveness to avoid danger or trouble - is substituted for 'mindfulness'.

Self-Observing and Self-Reflection: Metacognition and the Introspective Program

Throughout the suttas or Buddhist texts, it is clear that Buddha taught a skills acquisition, goal oriented, introspective bhavana or mental cultivation/training program using metacognition. We can say it is primarily an introspective program, because its primary plan is the monitoring and evaluation of any number of one's own mental states, including sensory, bodily, cognitive and emotional states. Indicating the importance regarding mental cultivation, the Buddha is reported to have said, *"The training of the mind is good, a mind so tamed brings happiness", "The tame mind brings bliss", "All that we are is the result of what we have thought; it is founded on our thoughts, it is made up of our thoughts",* and finally, *"We will develop mindfulness immersed in the body. We will pursue it, hand it the reins and take it as a basis, give it grounding, steady it, consolidate it, and undertake it well. That is how you should train yourselves."* Here the taming of the mind that the Buddha is talking about is

realized through mindfulness, which has been likened to that of the trainer who subdues an unruly animal. Therefore, what is being discussed in the early Buddhist description of mindfulness is not a passive, sense-based, non-judgmental skill, but more accurately involves metacognition. Metacognition engages cognitive-reflection and refers to the monitoring and control of thought, especially over specific processes used in learning, which enhances problem solving ability.

To summarize, metacognitive regulation refers to processes that monitor and control thought; especially those that coordinate cognition. It is a term used to describe skills involved in monitoring learning and making changes in either how or what one studies. These include both bottom-up processes called cognitive monitoring (e.g., error detection, source monitoring in memory retrieval) and top-down processes called cognitive control (e.g., conflict resolution, error correction, inhibitory control, planning, resource allocation).¹

² Metacognition is linked to executive function, which involves the ability to monitor and control the information processing that are necessary to produce voluntary action.

So, metacognitive skills or executive functions help maintain the motivation and effort to see a task to completion, and the ability to monitor and skillfully intervene when both unwanted internal and external stimuli occur. Metacognition by engaging in self-reflection or introspection enhances monitoring any lapses in knowledge and the correcting of them. Right Mindfulness, when understood as Metacognition, plays a critical role in successful 'right' skills acquisition, 'right' skills consolidation and application training, and the generalization and maintenance of the right factors of the Eightfold Path.

The author has written about other benefits of mindfulness, such as, *“promoting executive-level functioning in detecting when the mind has wandered (meta awareness) further reduces lapses in attention. Mindfulness practice promotes a form of meta-cognitive insight of learning to emotionally disengage from distracters (frustration; anxiety). This form of top-down cognitive control leads the Mindfulness practitioner to more readily focus on the present task leading to better performance.”*³

Mindfulness as memory

The early Buddhist definition of Sati as memory is indicated by such terms as: calling to mind; remembrance; bearing in mind; and recollection. In the Dhammapada, mindfulness is compared to the treasurer of a king who remembers the royal possessions in detail, daily; at night and in the morning. Also, the mindfulness of the aspirant to enlightenment remembers the three pillars of the teachings of the Buddha; Virtue, Concentration, and Wisdom. The value of this recollected activity of mindfulness is seen in the increasing awareness of the essentials of 'right' living in the aspirant's mind, and the growing strength of purpose for realizing these within him or herself.

The early Buddhist definition of mindfulness or Sati including as memory (remembrance; bearing in mind; and recollection) is really considering the executive functions and metacognition of the learning program called the Eightfold Path. We have seen that to proceed on the Eightfold Path, practitioners need to assess whether or not retrieved information is relevant to the life experience they are trying to skillfully master, given that "*Successful differentiation of relevant from irrelevant memories is key to problem solving, planning, and other complex tasks. Planning requires reflecting on which course of action is necessary to achieve a goal, and as such planning is part of metacognition*".⁴ Action planning requires establishing both a main goal (enlightenment) and a hierarchy of sub-goals that must be satisfied for the main goal to be obtained (ethical behavior, concentration, learning the Four Noble Truths, etc.). The main goal usually guides the sub-goals. So we can adopt a definition of mindfulness as a method by which we skillfully and intentionally focus our attention to monitor and evaluate our behaviors, perceptions, feelings, thoughts, and mental phenomena in the present moment, with the right intention of purifying the mind as prescribed in the Eightfold Path.

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