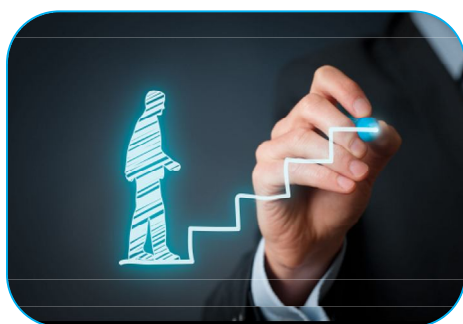




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## INGREDIENTS OF SELF-DEVELOPMENT: NEUROSCIENCE IMPLICATIONS IN EDUCATIONAL PRACTICE

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### ABSTRACT:

*Learning how to 'understand, adapt to and prosper in these turbulent times has become a critical competence' (Carneiro, 2007). The present world is complex and requires multifaceted responses. This insists on teachers' knowledge on neuroscience and education and the related competencies to build necessary skills for meeting challenges among the learner community. The essential ingredients for development*

*of any persona, according to neuroscience, are Attention, Self-awareness, and Problem solving ability, Memory, Emotional regulation, and Reflective practice. A thorough understanding of the above constructs with their scientific principles is the unwritten rule for the present day teachers. This paper highlights the significance of components of self-development and the need for teachers to get trained on necessary competencies for meaningful performance of their duties.*

**KEYWORDS:** neuroscience and education, Problem solving ability.

### INTRODUCTION

The globalization in 21<sup>st</sup> century calls upon the teachers to equip themselves with the required competencies to meet the future requirements of the society. The impact of social and other forms of changes in society demands effective teaching-learning process in classroom situation. There is a need for constant upgrading and modernization of knowledge, skills and understanding on the part of teachers. Teachers have to educate, teach, guide and evaluate, and also demonstrate their capacity to develop

themselves and to participate in modernizing the teaching leaning process to fulfil the needs of 21<sup>st</sup> century students. These professional competencies of teachers can be developed through their own practice of building attention, self-awareness, problem solving ability, memory, strengthening emotional regulation and reflective practices. It is possible through neurocognitive strategic inputs. This practice facilitates the teachers to develop themselves and meet the learning needs of the students on the basis of their thinking and learning.

### ATTENTION BUILDING PRACTICE FOR TEACHERS

The term attention refers to the mechanisms that facilitate adaptive behavior by selecting, integrating, and prioritizing the information (Berger, 2011). In human brain various regions are involved in attention formation. Each region of the brain correlates and works together and regulates the attention formation. The focused attention accelerates learning towards reaching the destination.

In classroom situations gathering the attention of the students is the main difficulty for a teacher. This difficulty is solved by using neurocognitive strategies in teaching-learning. This could be processed only through

understanding SWOT of the students as well as the interest of the students. The subject expertise of the teacher along with appropriate transaction design of every class kindles the interest and gain the complete attention of the students. The activation of attention formation throughout the teaching-learning process builds strong knowledge among the students and produces the best results to the teachers. In today's inclusive education classroom the demand of the teachers is more where they need to have understanding of the science of attention formation in the learners with attentional disorders. Attention Deficit Hyperactivity Disorder (ADHD) creates inattention among learners. In school-aged individuals inattention symptoms often results in poor school performance. These inattention problems are rectified through applying neurocognitive intervention of go/no go task to attentional disorder learners. The neurocognitive attention related interventional training is essential for the teachers to build capacity in activation of attention among students with ADHD. This process is the most important step in teaching-learning process.

### **SELF-AWARENESS BUILDING OF THE TEACHERS**

The self-awareness is the realisation of one's own strength and weakness through thinking about thinking. Self-awareness among teachers creates deep thinking on observation, evaluation and reflection on their own teaching. It represents an essential focus, one that attunes them to the subtle murmurs within that can help guide their way through life. This inner radar holds the key to managing what they do-and just as important, what they don't do. This internal control mechanism makes quality teachers.

In turn if teachers apply these practices in learners, it will help them to self-regulate their learning. Teacher education should provide opportunity to student-teachers for reflection and self-dependent learning without stuffing the training schedule with teacher-directed activities alone. Self-awareness rectifies their weakness and strengthens the ability of future teachers. It also help them to understand the psycho-social attributes and needs of learners, their special abilities and characteristics, their preferred mode of cognition, motivation and learning.

### **BUILDING OF PROBLEM SOLVING ABILITY AMONG TEACHERS**

Problem solving ability is the highest level of cognitive process in thinking. The productive work involved in the evaluation of the situation and the strategy worked out to reach one's set goals is collectively termed problem solving. This is an essential exercise for the individual advancement as also for the advancement of the society. In this context the teacher needs the capacity of problem solving ability in teaching-learning process. The following neurocognitive strategies build problem solving ability among teachers.

- Discovering the source of the problem so as to prevent recurrence
- Adjusting the attitude to deal with life's difficulties
- Considering how process impacts results
- Analyzing and discuss thinking
- Using various styles and models of thinking
- Exhibiting how thinking skills add values and joys to teaching
- Applying thinking skills to enhance learning
- Facilitating group discussions in which higher-order thinking skills is modelled
- Solving a problem or case study using brainstorming, discussion, deduction, and decision-making skills
- Setting up debates between students or teams of students, and have them comment on the process
- Thinking out loud
- Assigning projects that require reflection and personal expression
- In groups of three, learners can be given the opportunity to play the role of a listener, talker, and reviewer, respectively, while discussing a problem. The reviewer provides feedback to the talker and listener before exchanging roles

- Learners can be guided to make mind maps, or graphic organizers that reflect models or ways of thinking, patterns, sequences, and levels of detail (Jensen Eric,2008)

The above strategies enhance the problem solving capacity of the teachers as well as the learners in teaching-learning process. These higher level mental processes of thinking encourage creative and intuitive learning of 21<sup>st</sup> century learners. It also gives solution to students' learning problems and fulfills their methods of learning.

### MEMORY BUILDING OF THE TEACHERS

Memory capacity is more important for student teachers, as the quantity of information is stored in brain. The information will be retrieved from the brain, whenever and wherever required in teaching- learning process. This capacity determines the quality of the teachers. The teacher expresses their ideas, thoughts, and experience from stored information. There is no one area of the brain that is solely responsible for memory. Most of our memories are well distributed throughout the cerebral cortex.

Memories of the sound are stored in the auditory cortex; memories of names, nouns, and pronouns are traced to the temporal lobe. The amygdala is quite active for implicit, usually negative, emotional events. Learned skills involve the basal ganglia structures. The cerebellum is critical for associative memory formation, particularly when precise timing is involved, as in the learning of motor skills. The hippocampus becomes quite active for the formation of spatial and other explicit memories, such as memory for speaking, reading, and even recall about an emotional event.

The strategy of sound differentiation in pronouncing the words and concepts creates attention in listening and store these memories in temporal lobe. Teachers need to express their positive emotions in teaching-learning process, integrate the emotion and cognition to construct strong memory in learning. Had the important information be repeated, it is easy for the learners to remember. Then that information will be automatically transferred in long -term memory and stored in hippocampus. In this way, teachers can improve their long-term memory. The memory also differs in nature: they are explicit memory and implicit memory. The explicit memory is the conscious, intentional recollection of previous experiences and information. The implicit memory is a type of memory in which previous experiences aid the performance of a task without conscious awareness. Teachers do trigger their own implicit and explicit memory as well as the students. It aids better understanding of complicated concepts, definitions and theories. Teachers can use the following strategies to enhance their students' memory in learning.

- Engaging all five senses in teaching-learning process
- Encouraging discussions on learners' feelings and emotions regarding new learning
- Facilitating learners to incorporate the new learning in their personal lives
- Using storey boards to present key ideas
- Making a video or audio tape-the more complex the better
- Using peg words to link numbers for pictures to an idea for ease in recall
- Creating or redoing a song with lyrics that represent the new learning

The above neurocognitive strategies enhance the students' memory in teaching-learning process.

### STRENGTHENING EMOTIONAL REGULATION OF THE TEACHERS

Psychologists tend to define emotions in terms of conscious feelings, like love, jealousy, contempt, anger and despairs. The emotional functions are mediated by subcortical structures deep within the brain, such as the amygdala and hypothalamus. The amygdala works with the hippocampus to generate primary emotions from external perceptions and internal thoughts. It helps to emotionally charge experiences and to warn us about vital sensory information. Amygdala plays the role of controlling once mood, motivation and personality. In brain the left and right hemispheres are specialized for positive and negative emotions, respectively. The experience and expression of emotions is postulated to be asymmetrical, such that left frontal regions are dominant for positive emotions and

right frontal regions for negative emotions. The positive emotions are associated with approach behaviour and negative emotions are associated with avoidance behaviour.

Emotional regulation of teachers plays a vital role in their teaching and students learning. Expression of positive emotions and controlling or avoiding expression of negative emotions enhance their learning. It also creates peaceful learning environment among learners. Whenever teachers express positive emotions towards their students, it develops the teacher-student relationship. This phenomenon contributes enthusiasm among teachers and learners to achieve their learning task without any intricacy. The appropriate emotional regulation of teachers develops their own mindfulness as well as their learners' mindfulness. It facilitates the consciousness in understanding the complex information and context of the learning environments. The practice of following emotional regulation strategies can strengthen the emotional regulation of the teachers.

- Thinking of his/her own emotional thought process
- Expressing always positive emotions in teaching-learning process
- Avoiding expression of negative emotions among learners
- Applying humour while teaching
- Generating mindfulness in teaching and learning
- Stimulating conscious feelings like love, happiness and zeal
- Sharing emotional feeling while teaching
- Creating emotionally peaceful classroom environment
- Understanding the emotional feelings of the learners and others
- Maintaining balanced emotions in teaching-learning process
- Appreciating the students' innovation and achievements

The above emotional regulation strategies can strengthen emotional regulation of the teachers in the teaching-learning practices.

### **REFLECTIVE PRACTICE FOR PROFESSIONAL DEVELOPMENT OF THE TEACHERS**

Reflective practice is the ability to reflect on one's own actions and it requires continuous monitoring process to achieve the perfection. Reflective practice as a disposition to enquiry has at its roots the early work of Dewey (1933), specifically in relation to the reflective attitudes of open-mindedness, responsibility and wholeheartedness, which he considers to be both prerequisite and integral to reflective action.

In the recent decades, reflective practice has increasingly become embedded within the discourse concerning teachers' professional development, especially in relation to raising educational standards, performance management and whole-educational improvement planning. Teachers who ask questions on their own about their educational practice that stimulate seeking new ideas, evaluating and reflecting on their impact, and trying out new ways of working to improve their effectiveness. Teachers should have the practice of descriptive reflective conversations about their own classroom preparation. It enables the teachers to search for patterns and trends that emerge from their own teaching practices. Teachers can examine the situational, context-specific nature of their experience by practicing and asking themselves such questions as:

- What was taught?
- How was it taught?
- Did pupil achieve the intended learning outcomes?
- Which teaching strategies were effective and which were ineffective?
- How do I know?
- How does this make me feel?
- How might I do things differently next time?

The above reflective practice strategies help the teachers in their professional development. It triggers the self-evaluation and self-monitoring among teachers towards their professional performance.

### CONCLUSION

The twenty-first century promises uncertainty and complexity, and little respite is expected in the scale or pace of change (Carneiro, 2007). This complex environment rewards people with 'inclusive competencies, such as the ability to make local-to-global connections, recognize differing perspectives, and think critically and creatively to solve global challenges, and collaborate respectfully in different types of social forums' (2007). This emphasises the responsibility of teachers preparing youth to face changes and challenges and collaborate across cultures to address likely environmental, sociological and political difficulties. This could be a dream not come true, unless teachers of today are well oriented on neuroscience and trained on strategies applications in educational practices.

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