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## **THE NATURE OF META COGNITION AND ITS REVISORY USAGE IN LEARNING DISORDER**

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### **INTRODUCTION**

Education experts always pay attention to Meta cognition, knowing the human cognitive processes and finding some ways in order to reinforce and improve these abilities. Education researchers and experts are broadly interested in the learners' type of knowledge level. The passive information receiving and its maintenance is not the learning index needed in the future.

Now it is expected learners to think critically about what they heard or read and to consider the relationship between ideas and being decided in the process.

The concept of Meta cognition was first introduced by Flavén. He defines Meta cognition as any knowledge or action that its subject is cognition or regulating the cognition. Meta cognition differs from cognition. Cognition involves all the high mental processes such as , thinking , reasoning , creativity , intelligence , and other processes involved in information processing such as , information storage and retrieval accuracy .The above mentioned processes refer to an external content and subject, while Meta cognition is used for someone's knowledge in learning. The knowledge of human being from his or her cognitive system is the major emphasis in the Meta cognition.

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In this regard the learner tries to know his or her cognitive system, to decrease the ways of learning barriers ,to establish optimal methods of learning and to regulate all of the thinking stages in himself .Persons who have high power of Meta cognition , are careful about understanding the relations between the realities of issue ,and they consider their selected solutions . They analyze complex issues in the form of more detailed stages and by asking themselves they control directions of their thought.

Different researches about the role of meta cognition in different areas such as, problem solving is conducted. In the most of these researches is seen that qualified persons in meta cognition are more successful than others.

For example Kay observed that meta cognition behaviors have an important role in problem solving, and concluded that the differences of people in problem solving can be attributed to their meta cognitive differences. And these differences are less associated with the level of basic knowledge or even the selections of the solution's strategies.

On the basis of learning transmission , Brown believes that since meta cognition knowledge is likely the base of learning matter , then acquiring such a knowledge means to being aware of rules and strategies ,and the objectives of issue lead people to correspond their cognitive abilities to new practice and topic in a more effective and relevant way. Meta cognition is referred to any behavior, thought, or learner's action that he uses them through the learning process, and its objective is helping acquisition, organizing knowledge and skill storage as well as facilitating of using them in the future. According to what mentioned, in order to consider the role of cognitive skills in learning process, this paper is designed.

In this regard it first consider the concept of meta cognition and then it will consider the meta cognition based training pattern, the role of meta cognition skill in learning process as well as meta cognition role associated with teacher and learner.

## **DEFINITION OF META COGNITION AND ITS RELEVANT TERMS**

Meta cognition is any cognitive knowledge or activity which its subject is cognition or regulating the cognition and is divided to two dimensions of meta cognition knowledge and meta cognition experience. Meta cognition is: (Cetinkaya &Erktin) practice and cognitive strategy including, 3 categories of knowledge about regulating cognition and knowledge about cognition and two types of correlative meta cognition.



Cognition is occurred when a person is aware of his or her cognitive abilities and regulating it, and the second part of meta cognition is a thought which thinking is made and observed through it. (Perfect and Schwartz). Meta cognition knowledge and meta cognition awareness are different from each other. Meta cognition is said to one's explicit and clear knowledge, while awareness of meta cognitive components refers to our sense and experiences.(Kuhn) They are including the most comprehensive ideas and beliefs and content-independent practical skills which store in one's long term memory and facing meta cognition practices is recalled.

Meta cognition components undertake two major functions: including both relative knowledge of cognitive subjects which aware someone from his or her cognition and thinking characteristics and regulate cognitive activities.

Regulating cognition comprises 3 major s kills: planning, reviewing and evaluation. (Mohseny 1383)

Meta cognition state is a kind of meta cognition which have 4 meta cognition awareness, cognitive strategy, planning and self assessment components.

Meta cognition state is defined as a transitive state from a person's conceptual and intellectual situations, which has fluctuations in the intensity and changes over the time. But as quoted by Cetinkaya &Erktin 1996 trait meta cognition is applied to a relatively stable personal difference in individuals and their response to conceptual situations with different levels of meta cognition sate. (Oneill & Abedi2002). Meta cognition control are conscious and unconscious decisions we made them on the basis of reviewing process results. (Perfect & Schwartz). Theoretical bases and the results of the study indicate that meta cognition and its components are associated with academic achievement. (Korial, Maayan & Nussionson 2006) ;( Aguust Brady 2005) (Knouse 2008) ; (Bradford & Steve) ; (( Perfect and Schwartz) ; (Artino 2008) ; ( Haidar & Najabi2008).

Although the comprehensive definition of meta cognition seems to be challengeable and hard, most of the researchers agreed that meta cognition is called to identifying and knowing. More critically Meta cognition is someone's knowledge about the way of his or her learning. Flavel defined meta cognition as the awareness of cognition and cognitive processes and control, regulating and active review of cognition.



From the perspective of information processing theory, Dual Fulk consider meta cognition as the executive control processes such as, attention, review, practice, organizing, and manipulating information. The term "meta cognition" is someone's knowledge about his or her cognitive processes and the way of optimal use of them to achieve learning objectives. In other words, meta cognition is someone's knowledge or awareness of his or her cognitive system.

Metcalfe and Shimamura consider meta cognition as a means of manipulating and regularizing the cognitive processes. Brown represents meta cognition in two ways of cognitive activities or processes and methods using for regulating cognitive processes.

### **META COGNITION ELEMENTS**

Meta cognition processes have two independent but relevant elements; one of them is meta cognition knowledge and another one is meta cognition experience. Meta cognition knowledge is associated with knowledge regarding to mind and its function. Meta cognition knowledge includes practice and strategy and someone's knowledge about himself or herself. Meta cognition is achieved, when a person is being aware of his or her cognitive abilities and disabilities.

For example from the Rous perspective some one who is aware of his or her memory weakness, has a meta cognitive knowledge which announce him to do a appropriate action for compensating his disability. In general, meta cognition refers to what a person knows about himself or about cognition, and meta cognition experience is called to those meta cognitive experiences and sentimental experiences associated with cognitive action. Meta cognition experiences may be conscious and notable or less notable. People are less aware of their activities, unless through a cognitive activity such as ambiguity they face a fault in the sentence. It is here that meta cognition warn them they have problem and should think of a remedy for solving it. Meta cognitive experiences help a person to find that how much has developed? What problem has toward achieving the goal?

Flavel has mentioned 3 components of a person's knowledge about his or her cognitive system, a person's knowledge about his or her meta cognitive system, a person's knowledge about strategies.



### **A PERSON'S KNOWLEDGE ABOUT HIS OR HER COGNITIVE SYSTEM**

This component refers to a person's knowledge regarding to what he or she should know about learning and information processing and comprises some information such as the memory abilities, the memory levels and their capacity, the way of considering subjects and controlling processes. Being aware of these memory abilities and true estimating of these abilities can help a person in obtaining maintenance and right use of what he or she learns.

### **A PERSON'S KNOWLEDGE ABOUT DUTY**

It includes knowledge about nature, quality, and the way of that duty which a person is going to being involved with it. If subjects are not selected carefully at the beginning of processing, recalling will face difficulty, as inefficiency of memory is most likely due to the user's inattention at the beginning of process.

In order to true information processing, the learner should be able to being aware of his or her ability at that subject.

### **A PERSON'S KNOWLEDGE ABOUT STRATEGIES**

This component suggests the awareness of cognitive and meta cognitive strategies and that a person knows where and when and from what strategy he can use?

Having knowledge about those strategies which are using in various stages of maintenance and information retrieval (organizing, mental review, focus and so on ) can be effective in obtaining and reminding .Paris and Vinugrad place meta cognitive strategies in the two dimensions of self knowledge and control and process knowledge and control. Self-knowledge and control includes 3 parts: commitment, insight, and accuracy. Process knowledge and control comprises 2 major elements: the types of effective knowledge in meta cognition and executive control of behavior.

The types of effective knowledge includes: predicate knowledge, process knowledge and conditional knowledge. Executive control comprises the value of evolution, designing and ordering.

Meta cognition has various elements that have an important role in improving the control of meta cognitive processes and these elements in interaction and mixing each other lead to improve the cognitive action.



## **GENERATING ELEMENTS OF META COGNITION**

Escra and Meshmen believe that elements are involved in generating and establishing a person's meta cognition theory that includes: cultural and learning elements, personal generating and congruent interaction. Meta cognition theories are generated through internalization of culture by means of social learning. Common (joint) social concepts are transferred to learners through informal experience. The most explicit type of cultural learning is direct training of the ways of meta cognitive skills and coordinating this skill to learners. Like a program whose aim is increasing conditional, processing, and predicating meta cognition knowledge about reading. In addition of cultural learning which is influenced by formal and informal training, individuals themselves build personal structures or institutions to develop their skills and cognitive strategies and to organize their meta cognition knowledge, and also being able to make conditions become strategic receivers. Congruent interaction comprises a process that has social organizing which is different from cultural transition and personal institution. These individuals have similar level of cognition which their interaction leads to increase a person's function in cognitive duties.

## **NECESSITY OF META COGNITION SKILL TRAINING**

The essential aim of meta cognition training is self-control and self-training, so that learners become independent learners who can correct, lead and regulate their learning and cognitive processes toward their given aims.

Many of learning and learning transition problems are derived from the lack of skills and meta cognitive strategies. The above mentioned skills and strategies give an individual the possibility of selection, regulation, management, and as a consequence the possibility of cognitive processes. So it is necessary for learners to be trained regarding some skills such as organizing, observing the planning and identifying the aim of training. So they can become dominant in deciding cognitive strategies and new basis can be generated.

Otherwise, solving the new practices which they have not seen before is difficult for them and so training such strategies is distinctive.

Cognitive training requires training the special strategies of duties. While meta cognitive training emphasis on regulation technique training, evolution and the way of using cognitive strategies. In order to know these two training we suggest active and proactive differences.



Proactive training is considered as a perspective in cognitive skills training which is done on the content.

By this training, learner, have not any knowledge about the importance and effectiveness of their given strategies and do not regulate their efficiency, for example it is trained to the learner to do annotating of the subjects.

The findings indicate that such methods do not lead to maintain and extend the trained strategies.

Meta cognitive training is an active approach to training, thereby one can consider importance of using functions and cognitive processes.

The learner knows that he should highlight the important points and how it is valuable for him and by doing so, his learning output will increase.

Regulation and leading on cognitive processes and activities is trained in this method of training. Anyway, meta cognition should not consider as the final aim of training, but it should be consider as an opportunity for priming the learners with necessary knowledge and skill to manage their learning, so that they will be skillful and curious in their future duties.

## **TRAINING PATTERNS BASED ON META COGNITION**

The first method is mutual training. This method was innovated by Palinskar and Brown to improve the reading and comprehension process.

In this method, 4 strategies such as asking, summarizing, explaining, and clarifying the complicated points and future events are used to improve the training process. The mutual training method is done as the form of grouping. In this method, the trainer and two or four learners are made a learning group.

The group activity is in this order: first the trainer and the learner read parts of a text for themselves voicelessly. Then, they apply summarizing, asking, clarifying and predicting processes on the covered text. Next, the trainers and the learners study some other parts of subject. This time one of the learners plays the role of the trainer. This procedure continues until it is required. They may not be able to use given strategies correctly at the beginning of action. In these conditions, presenting the clues are required guidelines.

Another method is mutual asking. This method was innovated by Manro and includes: represent the aim by trainer, (reading the sentence by trainer and learner, respectively),



asking the question from each other, answering to the given questions properly, arguing about the presented answers by the learners and the trainers through referring to the text information, persuading the learners to asking high level questions, (if the learners ask high level questions the teacher will say to them that it is a good question, before answering I should think about it, if the questions are low level, he just answers to them, and he persuades them by asking high level questions.) and continuing this method until is required.

Montangive, verger, and Mugan, suggest 4 important techniques in regards to meta cognition skills which includes: direct process trainings, problem solving strategies, process sampling, and feedback to function.

Determining the level of strategic knowledge of the learners and the amount of using these strategies is important. Being aware of basic knowledge, the level of learning style skill and information processing, strategic activity and motivating the learners for learning will help the trainers in representing the effective and enough training.

The explicit training of process and problem solving strategies require immediate corrective feedbacks to the learners function and representing positive reinforcement, great and dominant learning.

In this method every lesson takes the form of a play to facilitate learning, and to ensure the existence of cognitive process and self-regulation the learning of the learners.

In this method learners are actively involved in learning through primary discussion about the importance of problem solving and their personal function on pretest and the aims of the function which designed for them.

Process sampling includes a deep thought during doing the cognitive activity. This training strategy emphasis on learning through imitation and provides learners with an opportunity in observing and hearing the way of problem solving. The trainer as a sample indicates the learners how to recall every thing they think and do during the problem solving. This strategy leads to self-regulation skills of the learners.

In order to regulate the function of the learners and for indicating that how, when and how much they have developed, the trainer should be reflected.





In this way the learners are motivated to be active in all stages and problem solving strategies, especially in identifying unmotivated learners and motivating them by appropriate feedbacks is important.

The learners should know what behaviors and responses are exactly reinforced, so that they can repeat it.

Reinforcing the learners indicates that they become more successful in problem solving and this leads to self-confidence and they can extend their learning to other areas.

### **THE ROLE OF META COGNITION IN LEARNING PROCESS**

The purpose of cognitive strategies, organizing, repeating, mental review and extend or make a link between subjects. Meta cognition means the knowledge about self learning and regulating it.

As cognitive strategies are learning strategies, meta cognitive strategies are kinds of plans for regulating on cognitive strategies and leading them.

Major meta cognitive strategies can be placed in 3 forms of regulation planning, ordering, and regulation. Meta cognition has a major role in successful learning. In order to meta cognitive consideration and determining the effective components of meta cognition, successful learning is important.

The students, who have a powerful internal motivation for learning, use complicated cognitive process such as extending or organizing. The important role of components and meta cognitive skills in the effective learning of excessive studies is shown explicitly. Based on a study which has done on the students who were on the seventh grade of school in the experimental sciences and English language lessons, Pentrich and Degervet concluded that meta cognition has positively associated with the students learning.

The studies of Bransord, Sternbeg, and Zemerma show that there is a positive relationship between self-awareness and learning and self-awareness is a requirement for learning. Many of the learners consider the learning problem as a result of their disability, while their real problem is the way of using learning strategies. Self training in learning is an important factor in academic –achievement and self –trainer learners by determining some aims plan and evaluate for achieving to them. Those who more use self – determining (self-training) have more development in their education, self – determining (self-training) make students



to be active in a meta cognition, an incentive and a behavior in managing their ideas and learning, and control their learning.

## **THE ROLE OF META COGNITION IN RELATION TO THE TRAINER AND THE LEARNER**

Meta cognition has an important role in the learning process. For the trainer and learner paying attention to meta cognition means that the learners can promote their learning by being aware of their thought during the reading, writing, and problem solving.

And the trainers can easily reach positive insight to learning and accuracy (meta cognition elements) through internalization and systematic practice.

First of all, in this process the responsibility of inspecting the learning is transferred from the trainers to the learners. And second, self – perception and positive incentive is reinforced in the learners.

In this way meta cognition generates its personal insights to its ideas and grows independent learning.

Moreover, the trainer act as a sample for the learners, and the trainer as well as the learners spend a lot of his time for planning and immediate cognition of the samples associated with the content and class training, involving in problem solving, regulating on the learning process and training.

And when the learners do not achieve their goals, the trainer changes the strategies into more attempt to achieve cognitive and meta cognitive goals in his professional life and in the teaching task.

## **CONCLUSION**

If the aim of education is growing individuals who can be responsible for their learning, then, first is necessary to grow this characteristic in the trainers.

One of the major reasons of the lack of teaching the meta cognition skill in the class and lack of emphasis on the meta cognition strategies is that the trainer do not attention to these strategies or do not any knowledge about it.

The trainer should facilitate these trainings through decreasing the external control and through teacher – centeredness.



Thus, this insight should change in the trainers. In this regard, the trainer should pay attention to the learning methods and increasing the independence of learning and learners skills in learning rather than focusing on the magnitudes of the learning of the learners.

The learners can develop their learning skills through training of the meta cognition and try to obtain knowledge, in this way they become active learners.

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