METACOGNITION –A THEORETICAL OVERVIEW

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INTRODUCTION

Educators today are tasked with developing lifelong learners who can survive and thrive in a global knowledge economy – learners who have the capability to effectively and creatively apply skills and competencies to new situations in an ever-changing, complex world (The World Bank, 2003; Kuit & Fell, 2010). Pedagogical, even andragogical, educational methods are no longer fully sufficient in preparing learners for thriving in the workplace, and a more self-directed and self-determined approach is needed, one in which the learner reflects upon what is learned and how it is learned and in which educators teach learners how to teach themselves (Peters, 2001, 2004; Kamenetz, 2010). New technologies have also created a need for considering new pedagogical approaches, with andragogy falling out of favor with some educators, seemingly "outmoded in the light of recent rapid development in new teaching methods, learning resources, and digital media" (Wheeler, 2011 para. 1).

In recent years the concept of metacognition has emerged as a major focus of research interest in cognitive psychology. There has been a growing recognition that metacognition or selfawareness 'including awareness of ourselves as learners, helps us to learn more effectively'. Metacognition refers to higher-order thinking which involves active control over the cognitive processes engaged in learning. Activities such as planning how to approach a given learning task, monitoring comprehension and evaluating progress towards the completion of a task are metacognitive in nature. Because metacognition plays a critical role in successful learning, it is important to study metacognitive activity and development to determine how students can be taught to better apply their cognitive resources through metacognitive control.

Metacognition

The term "metacognition" is most often associated with John Flavell, (1979). According to Flavell (1979, 1987), metacognition consists of both metacognitive knowledge and metacognitive experiences or regulation. Metacognitive knowledge refers to acquired knowledge about cognitive processes, the knowledge that can be used to control cognitive processes. Flavell further divides metacognitive knowledge into three categories: knowledge of person variables, task variables, and strategy variables.

Metacognitive Knowledge

Stated very briefly, knowledge of person variables refers to general knowledge about how human beings learn and process information, as well as individual knowledge of one's own learning processes. For example, you may be aware that your study session will be more productive if you work in a quiet library rather than at home where there are many distractions. Knowledge of task variables includes knowledge about the nature of the task as well as the type of processing demands that it will place upon the individual. For example, you may be aware that it will take more time for you to read and comprehend a science text than it would for you to read and comprehend a novel.

Finally, knowledge about strategy variables includes knowledge about both cognitive and metacognitive strategies, as well as conditional knowledge about when and where it is appropriate to use such strategies.

Metacognitive Regulation

Metacognitive experiences involve the use of metacognitive strategies or metacognitive regulation (Brown, 1987). Metacognitive strategies are sequential processes that one uses to control cognitive activities and to ensure that a cognitive goal (e.g., understanding a text) has been met. These processes help to regulate and oversee learning, and consist of planning and monitoring cognitive activities, as well as checking the outcomes of those activities.

For example, after reading a paragraph in a text a learner may question herself about the concepts discussed in the paragraph. Her cognitive goal is to understand the text. Selfquestioning is a common metacognitive comprehension monitoring strategy. If she finds that she cannot answer her own questions, or that she does not understand the material discussed, she must then determine what needs to be done to ensure that she meets the cognitive goal of understanding the text. She may decide to go back and re-read the paragraph with the goal of being able to answer the questions she had generated. If, after re-reading through the text she can now answer the questions, she may determine that she understands the material. Thus, the metacognitive strategy of self-questioning is used to ensure that the cognitive goal of comprehension is met.
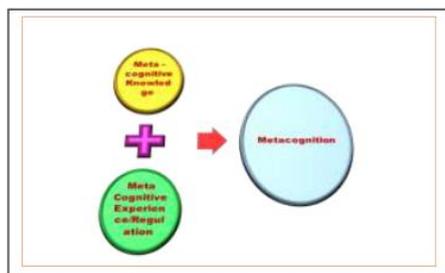

Fig1: Components of Metacognition

Metacognitive Skills

The four metacognitive skills; prediction, planning, monitoring and evaluation (Brown, 1980, Desoete, Roeyers & Buysse, 2001; Desoete & Roeyers, 2002; Lucangeli & Cornoldi, 1997). Metacognitive control/regulation is considered as the ability to use knowledge to regulate and control cognitive processes. Metacognitive control is related to metacognitive

activities that help to control one's thinking or learning (Ozsoy, 2008). Students having the prediction skill think about the learning objectives, proper learning characteristics, and the available time.

Prediction skill enables students to predict the difficulty of a task, in this way they use that prediction to regulate their engagement related to outcome. The selection of appropriate strategies and allocation of resources closely related to the prediction skill (Desoete, 2008). Monitoring refers to one's on-line awareness of comprehension and task performance.

Metacognition has 3 components: skills used in monitoring, actual monitoring activities, and making changes based on the results of monitoring.

Metacognitive Strategies

"A metacognitive strategy is a systematic cognitive technique to assist students in recognizing, planning, implementing and monitoring solutions to problems." The basic metacognitive strategies require:

• Connecting new information to former knowledge.
• Selecting thinking strategies deliberately.
• Planning, monitoring, and evaluating thinking processes

Some of the Strategies are: teaching evolved out of the metanalysis are given below;
a) Brain-based Learning
b) E-5 Model,
c) concept-based study
d) ubiquitous learning
e) Mind Map
f) Mnemonics Words –Words Approach
g) Role-Playing and Scenario Analysis
h) Case Studies
i) Cooperative Learning Strategies
j) Inquiry / Problem-Based Learning (PBL)
k) KWL:

Conclusion

The study of metacognition has provided educational psychologists with insight into the cognitive processes involved in learning and what differentiates successful students with their less successful peers. As students become more skilled at using metacognitive strategies, they become more independent as learners. Independence leads to ownership as students realize they can pursue their own intellectual needs and discover a world of information at their fingertips. In this rapidly changing world, the challenge of teaching is to help students develop skills that will not become obsolete. Metacognitive strategies are essential for this century. They will enable learners to successfully cope with new situations.

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