Metacognition And Learning

Abstract
Metacognition refers to knowing about knowing, or thinking about thinking. This article seeks to give an overview of some issues related to metacognition. It starts with a brief introduction of cognition and metacognition and then gives an account of its various definitions and characteristics. The differences between cognition and metacognition are also mentioned. It concludes with some ideas of research findings.

1. Introduction
Providing indicators on effectiveness, equity, and efficiency of educational systems, setting benchmarks for international comparison, and monitoring trends over time are the most important goals of the Programme for International Student Assessment (PISA). In addition, PISA builds a sustainable database that allows researchers world-wide to study basic as well as policy-oriented questions on education, including its relation to society and economy.

In order to reach these goals, PISA not only needs reliable and valid measures for assessing cognitive student achievement (reading, mathematics, science literacy and other “life skills”), but also information on non-cognitive outcomes (example students’ learning motivation), individual conditions (example students’ cultural, ethnic, and socio-economic background), as well as structural and process characteristics of the institutional context (example teaching practices and learning opportunities in classrooms, leadership and school policies for professional development, vertical and horizontal differentiation of the school system). The important characteristic of PISA, after 15 years, is the availability of trend data on the system level. PISA allows for the description of change in a country’s performance level over time, but also for the description of changes in...
non-cognitive outcomes, living conditions of adolescents and their families, professional practices and organizational structures for schooling. (Oecd, 2015).

2. Concept of Cognition

Cognition was derived from Latin language. It was used in the mid of 15th century. Cognition means-getting to know, acquaintance, knowledge. (Etymology Dictionary, 2014).

The meaning of cognition is as follows:

- Cognition means processing of information about the environment that is received through the sense.
- The brain’s representations of information of the world.
- Mentally processing information.

Cognition is the scientific term denotes the mental processes involved in gaining knowledge and comprehension, including thinking, knowing, remembering, judging, and problem solving. Cognition can be defined as the processing of information about the environment that is received through the senses. Cognition refers to mental activity and behavior through which knowledge of the world is attained and processed including perception, memory and thinking. According to (Galotti , 2007), (Carrer, 2001) Cognition, refers to the higher processes involved in understanding and dealing with the world around us in the foundation on which all the experience of the child have to be built.(Cited in Rajkumar, 2005).

3. Concept of Metacognition

Metacognition consists of two words, that is meta and cognition. Meta was derived from Greek language. Meta means after, behind or beyond, higher or changed, altered. Meta is used as prefix. Example- meta analysis, meta data, meta communication, meta cognition, and meta memory.

Metacognition means/is

- Thinking about thinking.
- Subdivision of cognition.
- The mental world of thinking.
- To make sure that the goal was reached successfully, such as double or triple checking the correct answer.
- Enables high quality learning and problem solving.

Metacognition is the term was coined by John Flavell in the year 1976. It means thinking about thinking or knowing about knowing. According to Flavell (1976) Meta cognition refers to one's knowledge concerning one's own cognitive processes or anything related to them, example the learning relevant properties of information or data. (Instructional Design, 2014).

4. Characteristics of Metacognition

Metacognition refers to a level of thinking that involves active control over the process of thinking that is used in learning situations.

The following are its important characteristics:

- It is a higher order thinking which involves active control over the cognitive process engaged in learning.
- It involves awareness and self-regulation of one’s learning processes.
It includes an awareness and understanding of how one thinks and uses strategies during reading and writing.

It involves knowing how to learn.

It consists of two basic processes occurring simultaneously: monitoring one’s progress as she/he learns, and making changes and adapting one’s strategies if she/he perceives she/he is not doing so well.

It is concerned with self-reflection, self-responsibility and initiative, as well as goal setting and time management.

It involves active control over the cognitive process that is used in learning situations. (Sabarishedn, 2014).

5. The Difference between Cognition and Metacognition

Cognition and metacognition is an interesting topic. However, for most people these two are very confusing. This is because the line of demarcation between the cognition and metacognition is often difficult to identify since these two tend to overlap. Basically, cognition deals with mental processes such as memory, learning, problem-solving, attention and decision making. However, the metacognition deals with an individual’s higher order cognitive processes, where a person has active control over his/her cognition. The aim of this article is to present a basic understanding of cognition and metacognition while emphasizing the difference between cognition and metacognition.

- **Cognition**

Cognition can simply be defined as all mental processes and abilities in which people engage on a daily basis such as memory, learning, problem-solving, evaluation, reasoning and decision making. Cognition helps to generate new knowledge through mental processes and also helps to use the knowledge that people have in daily life. Educational psychologists were especially interested in studying the cognitive processes of individuals through the growth and development of children.

- **Metacognition**

Metacognition is often defined as thinking about thinking. It allows the complete a given task well through planning, monitoring, evaluating and comprehending. This means while cognitive processes allow normal functioning of individuals, metacognition takes it a level higher making a person more aware of his/her cognitive processes. For example, imagine a child who is completing a mathematical question. The cognitive process would allow the child to complete the task. However, the metacognition would double check through monitoring and evaluating the answer. In this sense, metacognition helps to verify and build the confidence of the child. This is why it can be said that metacognition helps successful learning. (Admin, 2014).

6. Discussion


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There is no significant difference between mathematics and physical science prospective teachers in planning and evaluation. Parimala Fathima, Sasikumar, Panimalar Roja (2014) experimented, “Enhancing Teaching Competency of Graduate Teacher Trainees through Metacognitive Strategies”. There is a significant real improvement in enriching the concepts of metacognitive intervention strategies from pre to post assessment. Sivakumar, (2014) surveyed, “Metacognition Awareness of Secondary Teacher Education Students in Relation to their Attitude towards Teaching”. There is no significant relationship between metacognition awareness and attitude towards teaching of B.Ed., students. By analyzing the various reviews of metacognition the investigator found that, this variable was correlated with other variables like communicative competence, achievement, prospective teachers, teaching competency, and attitude.

7. Conclusion

Metacognition is an important aspect of “student learning”. It involves self regulation, reflection upon an individual’s performance strengths and weaknesses. It helps the learner to set priorities, manage time and effective utilization of resources. Thinking of one’s own cognition will assist him in planning the way to approach a learning task, monitoring comprehension, and evaluating the progress towards the completion of a task. Students can enhance their learning by becoming aware of their own thinking as they read, write and solve problems in school. Metacognition is a powerful construct in today's educational setting, and its principled teaching can instil a sense of independence and autonomy into learners.

Reference