Metacognitive Strategies: An Effective Teaching style

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Abstract

This study analysis metacognition strategies, and academic success of leaners. Teachers who use metacognitive strategies can positively impact students who have learning disabilities by helping them to develop an appropriate plan for learning information, which can be memorized and eventually routine. Metacognition is important in learning and is a strong predictor of academic success. Metacognition is often referred to as "thinking about thinking." But that's just a quick definition. Metacognition is a regulatory system that helps a person understand and control his or her own cognitive performance. "Metacognition" essentially means cognition about cognition; that is, it refers to second order cognitions: thoughts about thoughts, knowledge about knowledge or reflections about actions. This study supports research findings suggesting that students with Metacognition the rewards of academic success.

KEYWORDS-Metacognition, Self-efficacy, cognitive strategies, Metacognitive Awareness Inventory (MAI), Approaches and Study Skills Inventory for Students (ASSIST)

1. INTRODUCTION

Metacognitive strategies refer to methods used to help students understand the way they learn; in other words, it means processes designed for students to 'think' about their 'thinking'. Teachers who use metacognitive strategies can positively impact students who have learning disabilities by helping them to develop an appropriate plan for learning information, which can be memorized and eventually routine. As students become aware of how they learn, they will use these processes to efficiently acquire new information, and consequently, become more of an independent thinker. Below are three metacognitive strategies, which all include related resources, which can be implemented in the classroom:

Metacognition is often referred to as "thinking about thinking." But that's just a quick definition. Metacognition is a regulatory system that helps a person understand and control his or her own cognitive performance. Metacognition allows people to take charge of their own learning. It involves awareness of how they learn, an evaluation of their learning needs, generating strategies to meet these needs and then implementing the strategies. (Hacker, 2009). Figure A indicate that Learners often show an increase in self-confidence when they build metacognitive skills. Self-efficacy improves motivation as well as learning success. Metacognitive skills are generally learned during a later stage of development. Metacognitive strategies can often (but not always) be stated by the individual who is using them. For all age groups, metacognitive knowledge is crucial for efficient independent learning because it fosters forethought and self-reflection.

Figure A: Metacognition process

American developmental psychologist **John Flavell** is regarded as a foundation researcher in metacognition. He was influenced by the work of Jean Piaget. Flavell defined metacognition (as cited in Jadav, 2011) knowledge and cognition about cognitive phenomena. The term metacognition literally means cognition about cognition, or more informally, thinking about thinking (Livingston, 1997; Peirce, 2003; & Padma 2013). Metacognition is knowledge about cognition and regulate of cognition. So, 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 toward the completion of a task are metacognitive in nature (Livingston, 1997).

Metacognition is a concept that has been used to refer to a variety of epistemological processes. "Metacognition" essentially means cognition about cognition; that is, it refers to second order cognitions: thoughts about thoughts, knowledge about knowledge or reflections about actions. So if cognition involves perceiving, understanding, remembering, and so forth, then metacognition involves thinking about one's own perceiving, understanding, remembering, etc. it reflect on figure B. These various cognitions about cognitions can be labelled "meta-perception", "meta-comprehension" and "meta-memory" with "metacognition" remaining the superordinate term.
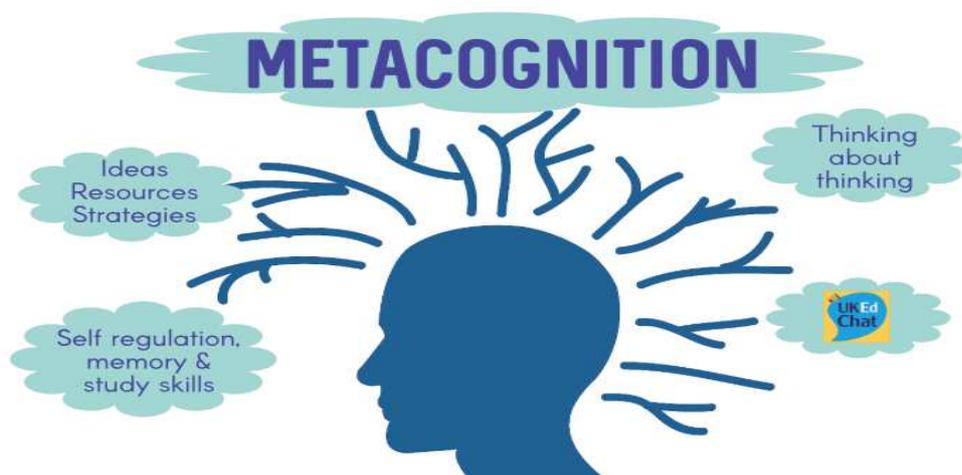

Figure B: Metacognition concept

2. THEORY OF METACOGNITION-

A theory of metacognitive regulation that is widely cited in the research literature is *Nelson and Narens*' (1990) Model of Metacognition. This consists of two levels: the object level and the Meta level shown in below on Figure 3.
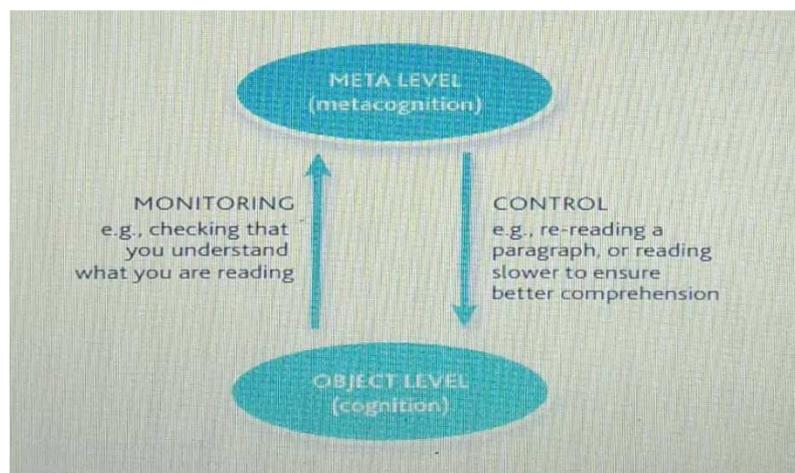

Figure 3: Nelson and Narens' (1990) Model of Metacognition.

- The object level is where cognitive processes or 'one's thinking' occurs. One example is decoding text when reading. At the object level, cognitive strategies (e.g., decoding) are used to help the learner achieve a particular goal (understanding the meaning of the text).
- The Meta level is where your 'thinking about thinking' takes place. At this higher-order level, metacognitive strategies are used to ensure the learner reaches the goal they have set. To continue with the reading example, this would begin with the learner thinking about how well they have understood the paragraph they have just read. This is termed monitoring. If they are happy with their comprehension level they will continue reading. If not, they will perhaps re-read the paragraph, or decide to use a dictionary to help their understanding. These actions are called control processes, as they are changing the learner's cognitive processes or related behaviours.

3. TEN METACOGNITIVE TEACHING STRATEGIES-

Successful learners typically use metacognitive strategies whenever they learn. But they may fail to use the best strategy for each type of learning situation. Here are some metacognitive strategies that will sound familiar to develop the metacognition ability of learners.

I. Metacognitive Awareness Inventory

There are two processes going on around learning how to learn. Most often students (and adults) are unaware of what they are and what is required to improve them.

1. Knowledge of Cognition (Declarative, Procedural, and Conditional)

1. Awareness of factors that influence your own learning

2. Knowing a collection of strategies to use for learning

3. Choosing the appropriate strategy for the specific learning situation

- **Regulation of Cognition**

4.   Setting goals and planning

5.   Monitoring and controlling learning

6.   Evaluating own regulation (assessing if the strategy you are using is working or not, making adjustments and trying something new)

In 1994, Schraw and Dennison created the Metacognitive Awareness Inventory (MAI) specifically for adult learners to bring awareness of metacognitive knowledge and metacognitive regulation (which they referred to "Knowledge of Cognition Factor" and "Regulation of Cognition Factor" respectively).

The MAI consists of 52 questions that cover these two components of cognition. They found through their research there was strong support for both of these factors and that they were also related as suggested by previous researchers.

II.   Pre-assessment (Self-Assessment) of Content

A simple activity such as finding out what students already know about a topic can help students begin to think about how learning works. Here are a few ways to conduct a pre-assessment (or a student self-assessment) of new content.

Create a few key questions about the content/topic a week prior to the class. Questions should ask students what they know already about the topic, possible identification of any misconceptions they hold on the topic, challenges or successes they have had with the topic, exploration into past experiences or applications of the content/topic.

These questions may be in the form of a homework assignment, a set of clicker questions for in class voting, a short reflective writing piece done in class and handed in.

a. Have the students individually hand in their responses anonymously. Skim through the answers after class. Possibly categorize/summarize all responses by themes.
b. Share responses with students the next class either verbally or a summary of themes.
c. Have a discussion with students about how asking these questions can help them in thoughtful planning of how they might approach a new idea or topic or how they will approach course content and associated studying/learning strategies.

III.   Self-Assessment of Self-Regulated Learning Skills

Students aren't going to learn how to be good learners unless we engage them in activities and discussions about how they perceive themselves as learners – and to see what approaches are working and not working for their learning.These items come from ASSIST (Approaches and Study Skills Inventory for Students) designed to evaluate university students' conceptualizations of learning, approaches to studying and preferences for different instructional methods (Centre for Research on Learning and Instruction, University of Edinburgh). The ASSIST tool identifies three main approaches to studying: deep, strategic and surface.

ASSIST is 21 statements you could pose to students to start them thinking about how they think and think about how they learn. Ideally we hope to have students utilizing deep approaches to learn rather than surface approaches. Strategic approaches are somewhere in between the two but don't really result in longer term

and meaningful learning. All items are to be responded by choosing from "strongly agree", "somewhat agree", "somewhat disagree" or "strongly disagree".

IV.   Think Aloud for Metacognition

As the instructor, you are an expert in your field. It can be almost impossible to remember a time when you did not think 'the way you currently do about your discipline'. At one time you were confused or unsure about studying your discipline. If you can offer to students examples of your own self-reflective examples of your own transition into thinking like an expert in your discipline, this can help students a lot. Anytime you can talk out loud ('think aloud') about how you view a document or a picture or think about a book, or share your thinking processes with students you are helping them become more metacognitive in their own approaches to the subject.

V.   Concept Mapping and Visual Study Tools-

Concept maps were originally developed to enhance meaningful learning in the sciences. A concept map is a way of representing relationships between ideas, images or words. Concept maps are a way to develop logical thinking and study skills by revealing connections to the big ideas or the key concepts you are trying to teach. Concept maps will also help students see how individual ideas relate to the larger whole or the bigger picture.

Learning benefits can be derived from instructor-led or student-constructed concept maps of the connections and key ideas from a course or class. It is best that the instructor demonstrate how to design a concept map of a class or course before students are asked to do the same. Show students how the readings, videos, assignments and activities are connected to the course learning outcomes and other courses.

VI.   Classroom Assessment Tools-

There are many short activities you can do during class time that will help promote metacognitive thinking in your students. Sometimes these little activities are called "Classroom Assessment Tools – CATS" (term coined by Angelo and Cross).

Here is a sampling of a few tools to consider. They often take a few minutes to do and are easy to implement. CATs give students and faculty immediate feedback on learning.

VII.   Metacognitive Note Taking Skills-

Provide students with guidance and models for how to take good notes during a class. Here is a suggestion for a format you can replicate or draw on the board and discuss with students.

- **Beginning of Class (Plan + Connect)**

In this section, encourage students to prepare their notes in an organized fashion. Stop the class and have them complete the connections questions in their notes. This will help them start thinking about how this class fits in with what they already know or want to know more about.

- **Date:**
- **Course Name:**
- **Class Learning Outcomes:**
- **Connections:**

- What do I already know about this topic?

- How do I feel about this topic? (Excited, anxious, curious, nervous)

- How does this topic relate to something I already know?

- What questions do I have already about this topic?

- **Middle of Class (Monitoring Learning)**

In this section, encourage students to create 2 columns in their notes. In the left column ask students to record insights, 'ah-ha' moments, questions students have about the content, connections they are making to other classes/topics, and also any feelings or thoughts they have on the class. In the right column they take traditional notes on what is being presented. Encourage students to refrain from writing everything. Write key concepts and headings on the board and indicate to students when you are shifting to a new section or concept.

- **Learning Insights - Class Notes**
- **End of Class (Reflecting on Learning)**

Near the end of class, ask students to draw a line below their notes and write a summary of the whole class. Just a few sentences is enough to get students thinking about the key learning that has just happened and what the whole class was about.

VIII.   Reflective Writing-

Reflective writing helps students make connections between what they are learning in their homework/class content and with how they are integrating the content into their current learning structures. Writing helps students observe themselves before, during and after their reading, watching and listening experience. Reflective writing can also take the form of jotting down their affective and other personal reactions to learning the material. The most popular reflective writing activity is the "minute paper" whereby you have students respond to prompts that ask them to think about their experiences with the homework, class activities or recent learning experiences in your class. Here are some sample prompts to use for your reflective writing activities:

- The most important part of the reading, video or class is….

- The most useful or valuable thing(s) I learned today was….

- The most surprising or unexpected idea I encountered was…

- The ideas that stand out the most in my mind are….

- This helped or hindered my understanding of the reading, video or class ….

- Two ideas that I have found confusing are….

- "I learned a lot doing this assignment". I agree (or disagree) because….

IX.   Wrappers-

A quick and easy tool for monitoring and evaluating metacognitive activity. A wrapper is an activity that surrounds pre-existing learning or assessment task and fosters students' metacognition. You can build a self-monitoring wrapper around any pre-existing part of a course (lecture, homework, or test)

X.   Retrospective Post-Assessment-

Near the end of a topic or end of the course, ask students to reflect (retrospectively) as to what they thought about a topic or concept before the course and what they think about it now. Learning is about change and this activity asks students to reflect on the changes in their knowledge, skills and attitudes and put that into perspective for moving forward. This activity engages students in a mechanism to train students to 'self-question', "How has my thinking changes (or not changed) over time?"

4. CONCLUSION-

The present study examined the metacognition strategies for teaching success. Metacognition strategies showed that teaching goals were related to performance of learners. This suggests that students with the intent to deeply comprehend information tend to be successful in their academic performance. Students who seek to simply perform well on a test without understanding the information do not necessarily have good performance. Metacognition is also related to academic success and students with good metacognition have good academic scores. Metacognitive skills and strategies that they use to mastery information; the use of superior metacognition eventually leads to enhanced academic performance of learners. Findings from this research may support training programs instructing students on how to adopt effective metacognitive skills and strategies and learn how to master information instead of simply seeking to perform well. These research findings may also encourage B.Ed. student teachers motivated to use Metacognition strategies during the classroom instruction.

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