

**METACOGNITIVE SKILLS AMONG SECONDARY SCHOOL
STUDENTS: AN ALTERNATE EDUCATION PRACTICE***ANA BALI¹**INTRODUCTION:**

Metacognition is a term which means ‘thinking about thinking’, ‘knowing about knowing’ and ‘cognition about cognition’. *Flavell (1979)* first used the word 'metacognition'. According to him, metacognition refers to one's knowledge concerning one's own cognitive process or anything related to them for example the learning related properties of information or data. It works as a monitor or executive who keeps a check on the inner world of the individual. In other words, the mental processing of the individual gets better as far as learning is concerned. Metacognition mainly deals with the learning process and makes a learner independent and self-directed. We need to apply metacognition in every act of learning. It helps in getting aware of our own thinking process and controlling and mending one's own thinking process. Secondary school students face many problems as this stage is a stage of confusions and misconceptions. The students fight with their selves, the changes from which they are passing through, dilemmas of society and societal barriers. They face many problems at school too, may it be with the peers, with the teachers, with the content taught in the class and many more. If they will get a metacognitive training they can manage their selves to be strong and be clear and precise in thinking like what they want to do? What strengths and weaknesses do they have? What strategies they need to improve their learning? etc. The students who possess the skill of metacognition, can observe their own thinking and this process of observing one's own thinking is also known as the ‘reflective process’.

The purpose of secondary education is to make students ‘Intentional Learners’ who can adapt to new environments, integrate knowledge from different sources and continue learning throughout. Metacognition makes teacher and students of secondary level realize their inner potential. It is a kind of *Self-Knowledge*. The students can *self-correct, self-evaluate, self-monitor, self-instruct* and *self-reinforce* themselves. Metacognition is also known as ‘*Brain Based Learning*’ and ‘*Self-Regulation*’. Secondary school students should know the art of self-regulation. *According to Zimmerman (2000)* Self-regulation of learning refers to learners’ beliefs about their capability to engage in appropriate actions, thoughts, feelings, and behaviors in order to pursue valuable academic goals while self-monitoring and self-

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reflecting on their progress toward goal completion. According to *Henderson and Dweck (1990)*, the key to a student's ability to become a self-regulated (i.e., metacognitive) learner is to understand that one's ability to learn is a skill that develops over time rather than a fixed trait, inherited at birth. Students who believe that the ability to learn can improve over time earn higher grades, even after controlling for prior achievement.

WHY IT IS IMPORTANT TO TEACH METACOGNITIVE SKILLS TO SECONDARY SCHOOL STUDENTS?

Kuhn (2000) defined metacognition as, 'Enhancing (a) metacognitive awareness of what one believes and how one knows; and (b) meta-strategic control in application of the strategies that process new information.' This awareness is developmental and lies on a continuum.

Aronson et al. (2002) and Blackwell et al. (2007) reported that students with metacognitive skills set reasonable goals for themselves and have the self-efficacy to choose and use productive learning strategies. These strategies then result in learning gains. Moreover, students can be taught that their ability to learn can improve over time; those who learn this simple lesson show increased motivation to learn and improved grades.

Pressley et al. (1998) found that students' comprehension was not enhanced by merely reading more text. If the students used even one of the strategies, for example summarizing, comprehension was improved. If students were given a host of strategies that they could apply at their discretion, comprehension was greatly improved.

Pressley et al. (1998) conducted a qualitative research study on 10 fourth- and fifth-grade classrooms to investigate instructional practice regarding reading, writing, motivation, classroom management, use of materials, and instructional goals. Teachers were interviewed twice during a yearlong period and monthly observations were carried out. They found that direct teaching of comprehension strategies was minimal. At the same time, the teachers professed to teach reading comprehension strategies. Some of the teachers did mention strategy use but did so in a passive manner without actively and directly teaching the strategies. Some teachers felt like they taught the use of the strategies by using summarizing, predicting, and imagery as an assessment tool. This, however, does not validate that students used the strategies during the act of reading text. While some teachers used these more often,

most of the teachers did not believe it necessary to see that the students were aware of the use of such strategies.

Palincsar and Brown (1984) identified four activities they believe aid in comprehension-fostering and comprehension-monitoring activities. These activities are self-questioning, summarizing, clarifying, and predicting. The technique used by Palincsar and Brown was termed reciprocal teaching (RT). While research has shown that the strategies employed in RT are effective (Rosenshine & Meister, 1994), the strategy tends to be too time consuming for teachers to implement, and modifications are often necessary for implementation (Marks et al., 1993).

Xiying and Gang (2010) using questionnaires and interviews, conducted an empirical study of the gender differences in English reading strategies. Findings indicated that meta-cognitive reading strategies were used more frequently than cognitive ones.

Keeping into consideration the above mentioned studies, it seems important to develop metacognitive skills in students. Metacognition is important because:

1. It is important to remove misconceptions of students regarding their learning.
2. It is important to teach them that they can de-learn the things they learned incorrectly.
3. It is important because a learner is responsible for his or her learning.
4. It is important for the students to have knowledge and cognition about cognitive phenomena.
5. It is important as the learner develops the attitude of 'Know one's own knowing'.
6. It is important as it makes a learner aware of his or her own thoughts, strategies, feelings, actions and their effect on others.
7. It is important as the learner gets to know the use of intentional cognitive strategies/have cognitive goals been met?
8. It is important as the learner develops the capacity to monitor.
9. It is important as the learner consciously manages one's own motivation and attitudes towards learning.

HOW WE CAN DEVELOP METACOGNITIVE SKILLS AMONG SECONDARY SCHOOL STUDENTS?

1. **Wilson and Conyers (2014) have suggested in “How to Teach Students to Be More Metacognitive”:**
 - a. Explicitly teach students about this essential learning skill by defining the term metacognition. Especially with younger students, we recommend a metaphor - such as driving their brains -- as a concrete way to guide them toward thinking about how they can best learn. This metaphor taps into students' desires to master important skills for driving their destiny.
 - ii. Ask students to describe the benefits and supply examples of driving their brains well. For example, sometimes we might need to put on the brakes (e.g., by reviewing a reading passage to make sure that we understand it) or step on the gas (e.g., by jotting down and organizing notes for an essay instead of getting stuck on how to start it). We need to keep our brains moving in the correct lane and along best route toward achieving our goals.
 - iii. Whenever possible, let students choose what they want to read and topics they want to learn more about. When they are genuinely interested and motivated to learn about a topic of study, students are apt to sustain interest in thinking about a project over the long haul.
 - iv. Look for opportunities to discuss and apply metacognition across core subjects and in a variety of lessons so that students can transfer it for the most benefit. When Donna has taught this topic, she's often asked students to give examples across academics, in interactions with friends and family, and (for older students) on the job. If she's with young children, she asks them how their parents might use this strategy in their work.
 - v. Model metacognition by talking through problems. We've found that students learn a lot from listening as their teachers use higher-order thinking strategies aloud. They often laugh when their teachers make "mistakes," and they learn when their teachers stop, recognize the miscue, and step through the process of correcting. This "teachable moment" underscores that everyone makes mistakes, and that mistakes are best seen as opportunities to learn and improve.

2. Zimmerman's Performance Phase (2000):

- i. Self-control
 - a. Imagery
 - b. Self-instruction
 - c. Attention focusing
 - d. Task strategies
- ii. Self-observation
 - a. Self-recording
 - b. Self-experimentation

3. Lovett's Critical Steps to Teaching Metacognition (2008)

- i. Teaching students that their ability to learn is mutable
- ii. Teaching planning and goal-setting
- iii. Giving students ample opportunities to practice monitoring their learning and adapting as necessary.

WHAT IS THE ROLE OF A TEACHER IN DEVELOPING METACOGNITIVE SKILLS?**1. Teacher should remember 7 Learning Principles for enhancing metacognition among students as given by DiPietro (2011):**

- i. Students' *prior knowledge* can help or hinder learning.
- ii. How students *organize knowledge* influences how they learn and apply what they know.
- iii. Students' *motivation* determines, directs, and sustains what they do to learn.
- iv. To develop *mastery*, students must acquire component skills, practice integrating them, and know when to apply what they have learned.
- v. Goal-directed *practice* coupled with targeted *feedback* enhances the quality of students' learning.
- vi. Students' current level of *development* interacts with the social, emotional, and intellectual *climate* of the course to impact learning.

- vii. To become *self-directed* learners, students must learn to monitor and adjust their approaches to learning.

2. Teacher should 'KNOW' what they owe their students:

- i. Value and engage what students bring to the table
- ii. Actively confront and challenge misconceptions
- iii. Help students organize their knowledge in productive ways
- iv. Actively monitor students' construction of knowledge
- v. Stay up-to-date with what students value
- vi. Engage multiple goals
- vii. Build self-efficacy
- viii. Are responsive and helpful
- ix. Metacognitive awareness
- x. A lifelong learning disposition

3. Teacher can bring changes in his/her teaching methods through metacognition:

They can make their pedagogy effective and can reflect upon current teaching learning practices they adopt in their classroom:

- i. What are you already doing?
- ii. What needs to be done differently?
- iii. What are the challenges?
- iv. Think about where you are now.
- v. What do you do in relation to metacognition?
- vi. How are you developing thinking skills?
- vii. What actions need to be in place?

- viii. Who needs to responsible for these actions?
- ix. How can these actions to be resourced?

4. Teacher should enhance metacognition among students in the following manner:

In an article 'Promoting Student Metacognition' *Tanner (2012)* stressed that teachers and students should realize:

- i. How have I prepared for class today?
- ii. What's the best way for me to prepare for a class like this one?
- iii. What questions do I have?
- iv. Why did I miss those exam questions?
- v. What do I need to do to avoid missing questions like these on the next exam?

5. Teacher should adopt metacognitive strategies and plan their lessons accordingly.

These are:

- i. Planning
- ii. Monitoring
- iii. Evaluating
- iv. Resourcing
- v. Grouping
- vi. Note taking
- vii. Summarizing
- viii. Concept Mapping
- ix. Peer instruction
- x. Elaboration

CONCLUSION:

Teacher should plan his or her lesson which can enhance metacognitive skills among secondary school students. As secondary school stage is the most critical stage, it becomes very essential for the students to metacognitively strong. Metacognitive skills and beliefs about learning have consequences for students' learning and performance. Teaching metacognition: introducing these new skills and beliefs, and giving students practice at applying them improves students' learning. Secondary education can be enhanced by giving emphasis on metacognition both on the part of teachers and students. In today's world of

digitalization we do not need external evaluators who can assess one's performance, strengths and weaknesses. It is only an internal evaluator who can help a student to be an independent learner and evaluator and this internal monitor is '*METACOGNITION*'.

EDUCATIONAL IMPLICATIONS:

1. Monitoring and adapting strategies can be taught as learning habits. As **Lovett (2008)** suggested, teacher should use '*wrapper*' after every class. A *wrapper* is one tool for teaching self-monitoring behavior. A wrapper is an activity that surrounds an existing assignment or activity and encourages metacognition. For example, wrappers can be used with lectures, homework assignments, or exams. Wrappers require just a few extra minutes of time, but can have a big impact. They are effective because they integrate metacognitive behavior where it is needed - when the student is in a learning situation where self-monitoring can be helpful. Students can also get immediate feedback on the accuracy of their perceptions, thus alleviating the problem of over-confidence. There are *lecture wrappers, homework wrappers and exam wrappers*.
2. *Concept mapping* as part of *constructive approach* should be used to enhance metacognition skills among secondary school students. The *five E's* should be covered keeping into consideration 'Metacognition' as an important part of teaching in the classroom.
3. Formative and Summative evaluation should be done time to time to keep a check on the enhancement of metacognitive skills.
4. Metacognition modules should be developed by various agencies like **NCERT, CBSE, SBOSE, MHRD, etc.** for teachers and learning disabled students separately and should become mandatory for both of them to go through the modules and enhance their metacognitive skills and abilities. It is also suggested that metacognitive questions should be given in the *textbooks* of the students after practice exercises.
5. Metacognition experiments should be conducted by teachers to refine and enhance metacognitive skills and abilities among learning disabled students. Teachers can divide the students into groups and conduct such experiments for diagnosing the problems of learning disabled students and thereby improving their learning.
6. Secondary school students can be taught can be given *remedial teaching* by applying metacognitive approach.
7. Teachers should plan their metacognitive lessons in the manner as given by Welsh Government which is shown in a tabular manner given below:

THINKING SKILLS		
Plan	Develop	Reflect
Asking questions	Generating and developing ideas	Reviewing outcomes and success criteria
Activating prior skills, knowledge and understanding	Valuing errors and unexpected outcomes	Reviewing the process/method
Gathering information	Entrepreneurial thinking	Evaluate own learning and thinking
Determining success criteria	Thinking about cause and effect and making inferences	Linking and lateral thinking
Deciding on a time scale	Thinking logically and seeking patterns	Researching context, other precedents, exemplar material and applying it
	Considering evidence, information and ideas	
	Forming opinions and making decisions	
	Monitoring progress	
	Deciding on a time scale	

Source: A guide to using PISA as a learning context: Programme for International student assessment (PISA) in Wales published by Welsh Government.

SUGGESTIONS:

1. Metacognition should be given special place in the curriculum and teacher can arrange small activities before or after their class in its promotion. Teacher should acquire the time management skills and conduct such activities after successfully demonstrating the subject matter in the class.
2. Proper training should be given to the teachers to understand what metacognition really is and how students can become metacognitively aware? And also training should be given to plan their lessons keeping into consideration the importance of metacognition.
3. Special staff should be recruited in the schools for improving metacognitive skills of secondary school students.
4. Attitude of metacognition is heart of teaching and learning process should be developed in teachers and students both.