MAPPING THE METACOGNITIVE KNOWLEDGE OF HIGH SCHOOL STUDENTS IN CHENNAI DISTRICT

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ABSTRACT:

This study proposes to compute the level of Metacognitive Knowledge of high school students from Chennai District. The sample data was collected from 280 students belonging to IX standard from various schools in Chennai district. The results reveal the different levels of metacognitive knowledge of high school students and the standard of metacognition among the students.

KEYWORDS: Metacognition, Metacognitive knowledge

INTRODUCTION:

Metacognition is a concept that was introduced by John Flavell in the year 1979. It is the ability to control the thinking processes using various strategies such as organizing, monitoring and adapting. It is one's ability to reflect upon the tasks that is undertaken or selected such that appropriate strategies are utilized that are acceptable according to the socio-cultural norms. Metacognition is the process of thinking about thinking. Every human being does metacognitive processes all the time because it is like a basic survival strategy that helps him survive the challenges and problems every day. Developing metacognition can help an individual to improve his knowledge, skills and character qualities. Metacognition is the indispensable foundation in intelligent leadership because it highlights how an individual can think through a problem or a situation and the different ways the individual adopt to address a given situation or problem.

NEED OF THE STUDY: IMPORTANCE OF METACOGNITION IN LEARNING:

Metacognition is considered as a critical component of successful learning. It is a self-regulating and self-reflecting process. It employs the self-reflection of one's own strengths, weaknesses and the different capabilities of the individual. In education, metacognition is important because it helps and motivates students with self-regulation of their learning and implements transference of skills and content through reflection and abstract intelligence [3]. Beyond academic learning, metacognition helps the students to be self-aware about themselves and about their concerned mental states. Self- awareness helps the child to engage with his family, peers and society as it links the child's thoughts with his experiences with his social relationships. Students who encompass metacognitive skills perform better on academics. Swanson (1990) found that metacognitive knowledge can compensate for IQ and lack of prior knowledge when comparing fifth and sixth grade students' problem solving. Students with a high-metacognition were reported to have used fewer strategies, but solved problems more effectively than low-metacognition students, regardless of IQ or prior knowledge [4].

DESCRIPTION:

There are three types of metacognitive knowledge:

1. **Declarative knowledge:** refers to knowledge about oneself and about factors that can influence one's performance. It is the factual information that can be either written or spoken [5].

2. **Procedural knowledge:** refers to knowledge about manipulating things or actions. It helps an individual to perform tasks more efficiently and quickly. It is denoted as how to do or perform a task or take the procedural steps to complete the task [5].

3. **Conditional Knowledge:** refers to the idea of understanding when and how to use declarative and procedural knowledge. It allows the individual to allocate his/her resources when he/she is using strategy. It helps individual to think about why to use a skill or strategy and how one procedure is better than the other [5].

OBJECTIVES:

1. To discern the standard of metacognitive knowledge among the high school students.
2. To find the aggregate of the types of metacognitive knowledge among the high school students.
3. To acquire the difference between the level of cognition between male and female high school students.

METHOD AND SAMPLE OF THE STUDY:

Survey method was employed for this study and random sampling technique was used in the selection of sample of 280 high school students from standard 9 belonging to various educational institutions in Chennai.

TOOL USED:

The tool used by the investigator is a standard checklist called as Metacognitive Awareness Inventory (MAI) given by Schraw, G. & Dennison, R.S. (1994) [2]. The tool contains 52 items with two options 'True' and 'False'. The tool was given to the students and was presented with guidelines in filling the questionnaire.

SCORING:

For every 'True' given by the student, 1 point was given and for every 'False', 0 points were given. For assessing declarative knowledge, a total of 8 points are to be scored. For assessing procedural knowledge, a total of 4 points and for assessing conditional knowledge, a total of 5 points are to be scored by the students.

ANALYSIS AND INTERPRETATION:

The scores were analysed using statistical techniques involving mean, frequency and t-tests for further interpretation [1].

a. **Declarative Knowledge (Out of 8 points):**

Points Obtained		Frequency	Percent
Groups	(0-1)	5	1.8
	(2-3)	111	39.6
	(4-5)	140	50.0
	(6-7)	24	8.6
	(8)	0	0
	Total	280	100.0

Percentage - Declarative Knowledge
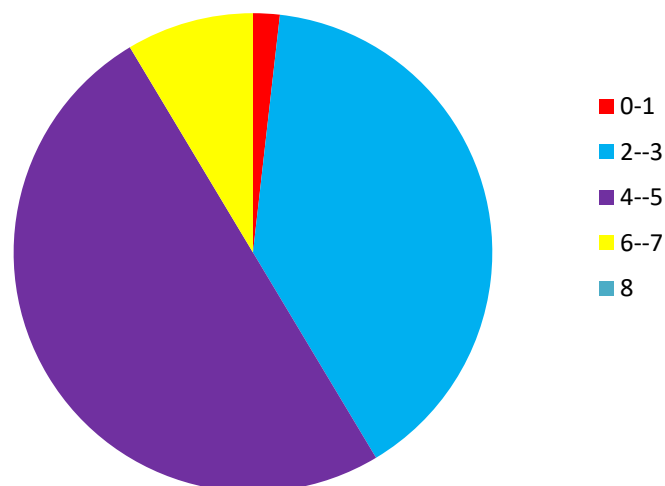
From the above table and chart, it can be interpreted that about 50% of the student sample taken, has acquired average of 4 or 5 out of 8 marks in declarative knowledge. At the same time, about 40% of the students have scored less than the average, which can be interpreted that students are very poor in declarative knowledge. This shows that students are not sure about their own abilities or skills.

b. **Procedural Knowledge (Out of 4 points):**

Points Obtained		Frequency	Percent
Groups	(0)	14	5.0
	(1)	68	24.3
	(2)	113	40.4
	(3)	65	23.2
	(4)	20	7.1
	Total	280	100.0

Percentage - Procedural Knowledge
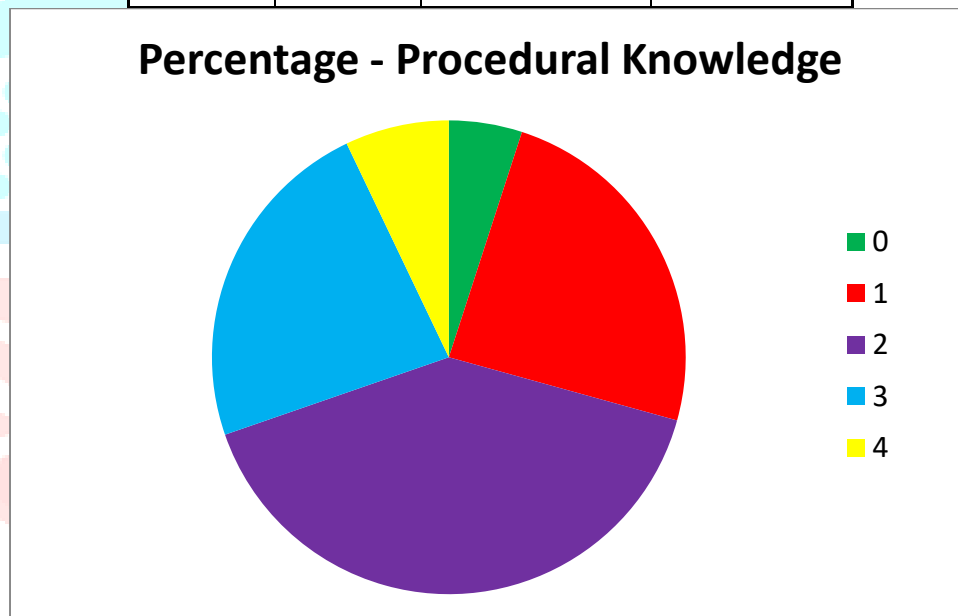
From the above table and chart, it can be interpreted that about 40% of the student sample taken, has acquired average of 2 out of 4 marks in procedural knowledge. At the same time, about 30% of the students have scored higher than the average, which can be interpreted that most of the students are confident in procedural knowledge. This shows that students have an idea of how to put their knowledge into actions.

c. Conditional Knowledge (Out of 5 points):

Points Obtained		Frequency	Percent
Groups	(0-1)	50	17.9
	(2)	94	33.6
	(3)	93	33.2
	(4)	36	12.9
	(5)	7	2.5
	Total	280	100.0
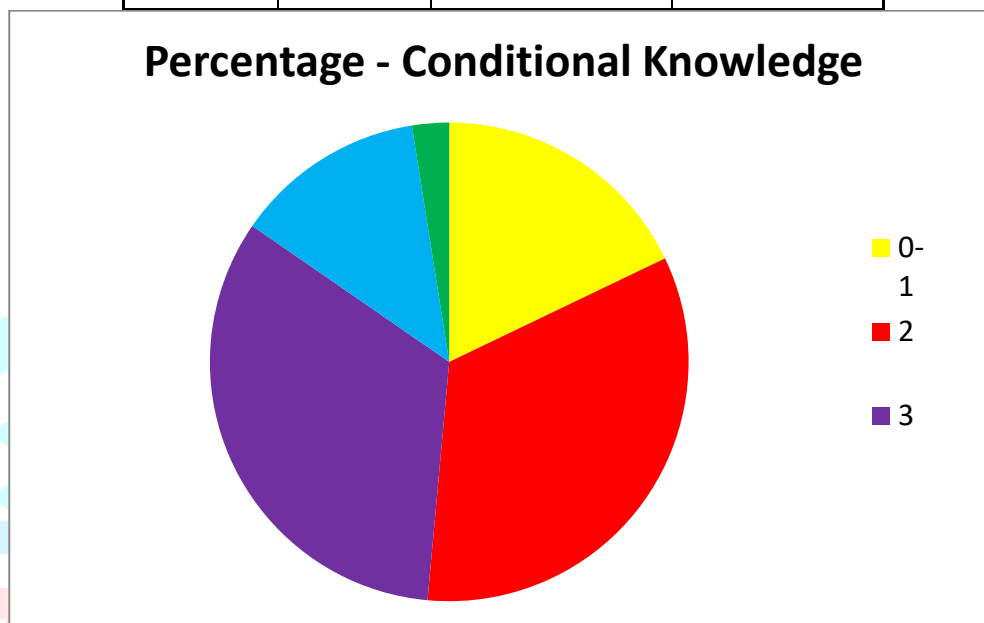
From the above table, it can be interpreted that about 30% of the student sample taken, has acquired average of 3 out of 5 marks in conditional knowledge. At the same time, about 51% of the students have scored lesser than the average, which can be interpreted that most of the students are poor in conditional knowledge. This shows that students don't know when and how to use their declarative and procedural knowledge.

d. t-test for the types of metacognitive knowledge:

Sub- Samples		N	Mean	S.D	t-value	p-value
Declarative Knowledge	Male	137	3.94	1.217	0.235	0.024
	Female	143	3.71	1.168		
Procedural Knowledge	Male	137	2.06	1.013	0.437	1.628
	Female	143	2.01	0.953		
Conditional Knowledge	Male	137	2.55	0.970	0.327	1.123
	Female	143	2.42	1.044		

From the above table, the following can be interpreted:

(a) There is a significant difference in the understanding of the declarative knowledge between the male and the female students.

(b) The male students have an understanding of the declarative knowledge more than the average when compared to the female students.

(c) There is no significant difference in the understanding of procedural knowledge among the students.

(d) There is no significant difference in the understanding of conditional knowledge among the students.

FINDINGS OF THE STUDY:

1. Most of the students are not aware about themselves and they are not aware of the knowledge about the factors that affect their performance.

2. Most of the students are aware of how to perform a task or take up a particular job in achieving the goal.

3. Most of the students are not familiar with the idea of when to use a particular procedure, skill or strategy or when not to use the same. They are not able to differentiate why one strategy works better than the other.

RECOMMENDATIONS:

The students should be given activities, projects and schemes that would increase metacognition. Technology could be used to enhance metacognition among students as it attracts interest and attention among them. It would help them to be self-aware of themselves and their actions, which in turn promotes their concerned mental states. Reflection on the learning process of the students will help them to learn better and do their work more efficiently.

CONCLUSION:

Metacognition is an impending factor in learning. Now-a-days, students are subjected to rote learning and are not given a chance to use their minds. This affects the mental states of the children as the burden of taking in factual knowledge continuously throughout the school year. With metacognition strategies, the child will be able to understand how he or she learns, processes the information and remembers it for retention. This will help the child to develop memory skills and develop strategies and situations that would promote learning.

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