



PROMOTING METACOGNITIVE AWARENESS AMONG HIGHER SECONDARY STUDENTS

A.S. Jagadeeswari, Full-time Ph.D. Research Scholar, Department of Education, Institute of Advanced Study in Education (Autonomous), Saidapet, Chennai, Tamil Nadu, India.

V. Chandrasekaran, Ph.D. Associate Professor and Head, Department of Education, Institute of Advanced Study in Education (Autonomous), Saidapet, Chennai – 600 015, Tamil Nadu, India.

Abstract

Metacognition is essential to successful learning because it enables individuals to better manage their cognitive skills and to determine weaknesses that can be corrected by constructing new cognitive skills. Promoting metacognition begins with building awareness among learners that metacognition exists, differs from cognition and increases academic success. Hence the present study was undertaken by the investigator to explore the metacognitive awareness among Higher Secondary Students. A sample of 445 students (209 Boys and 236 Girls) of XI Standard was selected by using simple random sampling technique for the investigation. The standardized tool 'Metacognitive Awareness Inventory' (MAI) developed by Schraw and Dennison (1994) has been used as a measure of metacognitive awareness of students. The survey method was used to collect the data from three types of managements such as Government, Govt. Aided and Private Higher Secondary Schools in Chennai City. Mean, Standard Deviation, 't' test and Analysis of Variance have been employed to analyze the data. The findings of the study reveals that the Metacognitive Awareness level among Higher Secondary Students were found to be high and there was significant difference in the Metacognitive Awareness based on their Gender and Type of School Management. Further it was found that there was no significant difference in the Metacognitive Awareness based on their Residential Locality and Family Income.

Keywords: Metacognitive Awareness, Successful Learning, Cognitive Skills, Academic Success.



Scholarly Research Journal's is licensed Based on a work at www.srjis.com 4.194, 2013 SJIF© SRJIS 2014

Introduction

“The value of education is not the learning of many facts but the training of the mind to think”
- Albert Einstein

Learning is a process developed within the single individual throughout life. However, in order to be successful learners, reflection, feed-back and an awareness of our knowledge is essential. If one is not aware of, or understands one’s own learning process and studying strategies, it becomes difficult to handle and take control of one’s learning. This awareness can be referred to as Metacognition. “To make an individual metacognitively aware is to ensure that the individual has **learned how to learn**” (Garner, 1988).

Metacognition is a mental process that a person uses in learning. Metacognition is a conscious and deliberate process in which a person analyzes and manipulates their thought processes to achieve task. Psychologists define it as a way of **“thinking about thinking”**. Metacognition is essential in learning, gaining insight to problems and organizing thought processes. Metacognition is used in connecting new information to information that is already known. ‘Metacognition’, sounds like a big word. But it is really more than that of another word to latch on to differentiate from scaffolding, bridging, multiple intelligence, cooperative learning, and performance based assessment, backward design, etc.

Need and Significance of the Study

Students should probably understand how they learn. They should know what works for them and what doesn’t. Our students, however, typically are not able to think about this in-depth. By using a metacognitive approach, we can help our students to better define how they learn best. This area has grown to be one of the largest and liveliest in Developmental Psychology. It plays an important role in oral comprehension, reading comprehension, problem solving, attention, memory, social cognition, personality development, communication and various types of self-control and self-instruction which are key concerns for school (Flavell, 1987). Many researchers believe that metacognition holds great deal of promise for helping students to do better. Metacognition has been linked to a wide variety of positive academic outcomes for students such as better grades and performance on tests of intelligence. Hence the present study was felt to be the need of the hour and was chosen by the researcher specifically for the higher secondary students as the metacognitive awareness would enable them to succeed academically, decide their career options and achieve their future goals.

Review of Related Literature

Phakiti (2003) investigated the relationship of cognitive and metacognitive strategy used to EFL, reading achievement test performance and found that a) the use of cognitive and metacognitive strategies had a positive relationship to the reading test performance and b) highly successful test takers reported significantly higher metacognitive strategy use than the moderately successful ones who in turn reported higher use of these strategies than the unsuccessful test takers. Bigozzi & Vezzani (2005) investigated the effects of individual writing on metacognitive awareness concerning scientific concepts. They found that individual writing enhances the use of metacognitive terms and the frequency of use regarding terms, which distinguish appearance from reality. Coutinho (2006) concluded that students with good metacognition tend to be successful students. Students with poor metacognition tend to perform poorly. Jayaprabha, G. and Kanmani, M. (2013) adopted a quasi-experimental design to study about “Metacognitive Awareness in Science Classroom of Higher Secondary Students” and they have noted that cooperative learning could be adopted regularly in classroom to enhance metacognitive awareness of higher secondary students.

Statement of the Problem

The present study is entitled as: “Promoting Metacognitive Awareness among Higher Secondary Students”.

Definition of the Key Term

The Greek word ‘meta’ signifies **going beyond**, so metacognition is cognition that goes beyond ordinary thinking. The term ‘meta’ refers to **second order knowledge**. Research activity in metacognition began with John Flavell, who is considered to be the “father of the metacognitive field.” An early definition of Metacognition is “One’s knowledge concerning one’s own cognitive processes and products or anything related to them. Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear...” (p. 232). Metacognition has a number of concrete and important effects on learning.

Objectives

1. To assess the level of Metacognitive Awareness among Higher Secondary Students.
2. To find out whether there is any significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to the following demographic variables: (i) Gender, (ii) Residential Locality, (iii) Family Income and (iv) Type of School Management.

Hypotheses

1. The level of Metacognitive Awareness among Higher Secondary Students is high in nature.
2. There is no significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to the following demographic variables: (i) Gender, (ii) Residential Locality, (iii) Family Income and (iv) Type of School Management.

Methodology

I) Method: Normative Survey Method was adapted to study the Metacognitive Awareness of Higher Secondary Students.

II) Tool Selected for the Study: After an extensive literature review the researcher adapted **Schraw and Dennison's (1994) Metacognitive Awareness Inventory (MAI)** because it is a reliable and valid instrument. Internal consistency of the inventory was excellent ranging from 0.93 to 0.88, thus provided a reliable assessment of Metacognitive Awareness. The inventory represents two component categories of metacognition, such as knowledge of cognition and regulation of cognition. The inventory consisted of 52 items. The inventory based on five point Likert scale ranging from "Always" to "Not at all" in which the participants were asked to tick the most appropriate box.

iii) Sample: The sample size was 445. For the purpose of the present study, simple random sampling technique was used. The sample consists of 209 Boys and 236 Girls of XI Standard Students selected from 3 Government, 2 Govt. Aided and 3 Private Higher Secondary Schools of Chennai City (Tamil Nadu).

iv) Statistical Techniques Used: Statistical techniques such as mean, standard deviation, 't' test and Analysis of Variance (ANOVA) were employed to analyse the data.

Analysis of Data

The collected data were subjected to statistical treatment using SPSS package leading to the findings which may satisfy the requirements of the objectives of the study.

HYPOTHESIS – I

The level of Metacognitive Awareness among Higher Secondary Students is high in nature.

TABLE – 1: Showing the Level of Metacognitive Awareness among Higher Secondary Students

Variable	Category	Frequency	Percentage
Meta Cognition	Low	57	12.81%
	Moderate	172	38.65%
	High	216	48.54%

From the above table, it is clear that the Metacognitive Awareness Level among Higher Secondary Students were found to be high.

HYPOTHESIS – II

There is no significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their Gender.

TABLE – 2: Showing the Mean, Standard Deviation, t-value on Metacognitive Awareness among Higher Secondary Students with regard to their Gender

Gender	N	Mean	Standard Deviation	't' Value	LOS
Boys	209	78.51	7.87		S
Girls	236	81.18	8.16	3.23	(0.01)

From the above table, it is clear that the calculated t - value is greater than the table value at 0.01 level. Hence the null hypothesis is rejected and concluded that there is significant difference between boys and girls in their Metacognitive Awareness. Girls mean score is greater than Boys mean score.

HYPOTHESIS – III

There is no significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their Residential Locality.

TABLE – 3: Showing the Mean, Standard Deviation, t-value on Metacognitive Awareness among Higher Secondary Students with regard to their Residential Locality

Locality	N	Mean	Standard Deviation	't' Value	LOS
Rural	207	80.14	7.87		
Urban	238	8.16	8.16	0.51	N.S

From the above table, it is inferred that the calculated t - value is lesser than the table value. Hence the null hypothesis is accepted and concluded that there is no significant difference in the Metacognitive Awareness scores between Rural and Urban residential locality among the Higher Secondary Students.

HYPOTHESIS - IV

There is no significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their Family Income.

TABLE – 4: Showing the group difference on Metacognitive Awareness among Higher Secondary Students with regard to their Family Income

Source of Variance	Sum of squares	df	Mean of squares	F- ratio	LOS
Between groups	300.35	2	150.18		
Within groups	30856.54	442	69.81	2.15	N.S
Total	31156.89	444			

The above table indicates that the calculated value of F-ratio is lesser than the table value. Hence the null hypothesis is accepted and concluded that there is no significant difference in the Metacognitive Awareness scores of Higher Secondary Student’s based on their family income.

HYPOTHESIS – V

There is no significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their Type of School Management.

TABLE – 5: Showing the group difference on Metacognitive Awareness among Higher Secondary Students with regard to their Type of School Management

Sources of Variance	Sum of squares	df	Mean of squares	F- ratio	LOS
Between groups	1275.22	2	637.61	9.43	S (0.01)
Within groups	29881.68	442	67.61		
Total	31557.90	444			

From the above table it is clear that the calculated value of F-ratio is greater than the table value at 0.01 level. Hence the null hypothesis is rejected and so further analysis is required to find out the significant difference among these groups. The results of further analysis are presented in the following table – 5 (a):

TABLE – 5 (a): Showing the Mean, Standard Deviation, t-value on Metacognitive Awareness among Higher Secondary Students with regard to their Type of School Management

Type of School Management	N	Mean	S.D	‘t’ - value	LOS
Government	164	82.14	8.92		S
Govt. Aided	141	78.56	7.95	3.70	(0.01)
Govt. Aided	141	78.56	7.95		
Private	140	78.69	7.61	0.15	N.S
Private	140	78.69	7.61		
Government	164	82.14	8.92	3.63	S (0.01)

Interpretation based on table 5 (a):

(i) Between Government and Aided School

The calculated t - value is greater than the table value at 0.01 level. Hence the null hypothesis is rejected and concluded that there is significant difference in the Metacognitive Awareness scores between students from Government and Govt. Aided Higher Secondary Schools.

(ii) Between Private and Aided School: The calculated t - value is lesser than the table value. Hence the null hypothesis is accepted and concluded that there is no significant

difference in the Metacognitive Awareness scores between Govt. Aided and Private Higher Secondary School Students.

(iii) Between Private and Government School

The calculated t - value is greater than the table value at 0.01 level. Hence the null hypothesis is rejected and concluded that there is significant difference in the Metacognitive Awareness scores between Private and Government Higher Secondary School students. Government Higher Secondary School Students Metacognitive Awareness score is found to be higher than the Govt. aided and Private Higher Secondary School Students.

Major Findings

1. The level of Metacognitive Awareness among Higher Secondary Students is high in nature.
2. There is no significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their Residential Locality and Family Income.
3. There is significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their Gender and Type of School Management.

Discussions

Results of the present study have importance in the field of education. The statistical analysis indicated that highly Metacognitively Aware students performed better than the low Metacognitively Aware students. There exists significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their gender. The girl students were noticed to be high in their mean score of Metacognitive Awareness than the boys. No significant difference prevailed in the Metacognitive Awareness among Higher Secondary Students with regard to their residential locality. Students from urban residential locality were found to have high mean score as expected in the Metacognitive Awareness than the students from rural residential locality.

Further there was no significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their family income. There exists significant difference in the Metacognitive Awareness among Higher Secondary Students with regard to their Type of School management. So the group differences were subjected to further analysis and finally the results of the present study revealed that the students from Government Higher Secondary Schools had more mean score in the Metacognitive Awareness than the students from Govt. Aided and Private Higher Secondary Schools.

Thus it is in line with the findings of the previous researches.

Educational Implications: Students should know the meaning and importance of Metacognition and the development of the capacity for it ought to be an explicit goal for both teacher and student. This goal must have a credible and enduring presence in the established curriculum and in assessments. Further the curriculum framers should include activities based on metacognitive skills, especially effective study skills in a more comprehensible way. The application of Metacognitive strategies such as self-awareness and self-monitoring is to develop independent learners who can control their own learning and learn how to learn for life.

Suggestions and Recommendations for Further Research

Any attempt to disseminate more completely what we know about metacognition into classroom preparation must be developed ultimately with an awareness of potential constraints due to the demands that such instruction would place on students and teachers. The research reviewed in the present study provides a strong man-date for infusing practices that support metacognitive processes into classrooms. In schools the teachers should improve their students' metacognitive awareness in order to improve their learning abilities. As the students happen to know more about effective learning strategies, their classroom achievement is likely to be higher. Creating a metacognitive learning environment in a classroom is very vital.

An interesting direction for further research may be to undertake cause and effect relationship between metacognition and students performance. Success of every student depends on the academic achievement which is really possible by giving this sort of awareness in metacognition.

This study also has some limitations, which may require attention in future research. Firstly, the sample of the present study consisted of students of class XI. So the Inventory may be applied to all students of different subject at different level. Secondly, the same study can be conducted in other districts. Finally, this type of research work could also be extended to Arts and Science Colleges; and also to Professional Colleges. Further the genuineness of the speculative reasons given in the present study for various findings may be found out experimentally.

Conclusion

**“LEARNING without THOUGHT is LABOR lost;
THOUGHT without LEARNING is PERILOUS”**

- Confucius.

Metacognition is important and consequential for learners of all ages. Metacognitive Awareness is central to conceptions of what it means to be educated. The world is becoming more complex, more information-rich, more of options and more demanding of fresh thinking. With these changes, the importance of Metacognitive Awareness as an educational outcome can only grow. Therefore, it is clear that Metacognition is a multi-faceted topic of research. In order to achieve observable improvements it is necessary to tailor the metacognitive awareness to the domain and blend it seamlessly into the teaching and learning process. Transposing the findings of the present study in a computational environment still poses big challenges. With no doubt the present study could be considered as a yardstick in promoting the Metacognitive Awareness among the students community.

References

- Annaraja, P., & Titus, S.V. (2012). Metacognitive Awareness of Secondary Teacher Education Students, *Edutrack*, Vol. 11, No. 6, March 2012.
- Bigozzi & Vezzani, (2005). A Cognitive Process Theory of Writing. *College Composition and Communication*, 32, pp. 365 – 387.
- Coutinho, S.A. (2006). A Model of Metacognition, Achievement Goal Orientation, Learning Style and Self Efficacy. Ph.D. Thesis, Unpublished, Illinois: Northern Illinois University.
- Flavell, J.H. (1987). Speculations about the Nature and Development of Metacognition. In Weinert, F.E. & Kluwe, R.H. (eds) *Metacognition, Motivation and Undertaking*. (pp.21-29). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Flavell, J.H. (1999). Cognitive Development: Children's Knowledge about the Mind, *Annual Review of Psychology*, 50 (pp.21-45). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Garner, R. & Alexander, P.A. (1988). Metacognition: Answered and Unanswered Questions. *Educational Psychologist* 24: (2), pp. 143 -158.
- Jayaprabha, G. & Kanmani, M. (2013). Metacognitive Awareness in Science Classroom of Higher Secondary Students. *Scholarly Research Journal for Interdisciplinary Studies*, Vol. 1, No. 4, 1266 – 1275, May – June 2013.
- Perfect, T.J. & Schawartz, B.E. (2002). *Applied Metacognition*. Cambridge: Cambridge University Press.
- Phakiti, A. (2003). A Closer Look at the Relationship of Cognitive and Metacognitive Strategy Used To EFI. Reading Achievement Test Performance. *Language Testing*, 20, pp. 26-54.

- Schoenfeld, A.H. (1983). Beyond the Purely Cognitive: Belief Systems, Social Cognitions, Metacognitions as Driving Forces in Intellectual Performance. *Cognitive Science*, pp. 329 – 363.
- Schraw, G., & Dennison, R.S. (1994). Assessing Metacognitive Awareness. *Contemporary Educational Psychology*, 19, 460 – 475.
- Schraw, G. (1998). Promoting General Metacognitive Awareness. *Instructional Science* 26, pp.113 – 125.
- Sternberg, R.J. (2007) *Cognitive Psychology*. New Delhi: Akash Press.
- Vygotsky, L.S. (1986). *Thought and Language*. Cambridge, MA: MIT Press.
- Zimmerman, B.J. (1995). Self-regulation involves more than Metacognition: A Social Cognitive Perspective. *Educational Psychologist*, 30, pp.217 – 221.