

# A Study of the Relationship Between Metacognition and Academic Achievement of Secondary Students

Poonam Chowdhry

BIT College, Partapur Bypass, Meerut, India

**Email:** Poonam.chowdhry@yahoo.in

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## Abstract

Present papers focused on the relationship between Metacognition and Academic Achievement of C.B.S.E. Students of XI standard. Metacognition is higher order thinking which is essential for meaningful learning. A sample of 84 students (Male & Female) of Meerut Zone was selected as the subjects for the study. Metacognition Inventory was used as a research tool which constructed Dr. Punita Govil. This Survey method was used for the study. As a result it was found that there is positive and significant relationship between Metacognition and Academic Achievement in C.B.S.E student of XI standard.

**Keywords:** Achievement, survey, metacognition, inventory

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One question that intrigues many cognitive psychologist is why some people learn and remember more than others. For those who hold in information processing view, part of the answer lies in the executive control processes including attention, maintenance rehearsal, elaborative rehearsal, organization and elaboration. These executive control processes are some time called metacognitive skills, because the processes can be intentionally used to regulate cognition.

The term Metacognition was introduced Flavell in 1976 to refers to the individual own awareness and consideration of his or her cognitive processes and strategies. It refers to that unique capacity of people to be self-regulative, not just to think and know but to think about their own thinking and knowing.

Donald Meichenbaum and his colleagues describes Metacognition as people's "awareness of their own cognitive machinery and how the machinery works". (Meichenbaum Burland, Cruson and Cameron 1985 p.5). Metacognition literally means cognition or knowledge about knowledge. This knowledge is used to monitor and regulate cognitive processes – reasoning comprehension, problem solving, learning and so on. Because people differ in their metacognitive knowledge and skills they differ in how well and how quickly they

learn (Brown Brandford Ferraro and Comion 1983, Morris 1990).

Metacognition involves three kinds of knowledge *declarative knowledge* about your self as a learner, the factors that influence your learning and memory and the skills strategies and resources needed to perform a task – *knowing* what to do; *procedural knowledge* or knowing how to use the strategies and *Conditioanal Knowledge* to ensure the completion of the task – knowing where and why to apply the procedure and strategies (Schraw and Moshman 1995).

Metacognition knowledge is used to regulate thinking and learning (Brown 1987; Nelson, 1996). There are three essential skills and allow us to do this : planning monitoring & evaluation. Planning involves deciding how much time to give to a task, which strategies to use, how to start, what resources together, what order to follow, what to skim and what to give intense attention and so on. Monitoring is the online awareness of "How I'm doing". Monitoring entails asking, "Is this making sense? Am I trying to go too fast?" Evaluation involves making judgement about the process and outcomes of thinking and learning. Many planning, monitoring and evaluation processes are not necessary conscious, especially in adults these processes can be automatic.

**Importance of Metacognition**

In this rapidly changing world the challenge of teaching is to help students develop skills which will not become obsolete. Metacognitive strategies are essential for the 21<sup>st</sup> century. They will enable students to successfully cope with life and educational problematic how situation. Teacher and school need a metacognitive environment which fosters the development of good thinkers who are successful problem solver and life learners.

**Operational Definition**

**Metacognition**

Flavell (1976) : Metacognition is “...knowledge concerning one’s own cognitive process and products or any thing related to them ....., Metacognition refers, among other things to the active monitoring and consequent regulation and orchestration of these processes in relation to cognitive object or data....

**Academic Achievement**

Academic Achievement has been defined as the accomplishment of the student in the academic domain as indicated by the C.G.P.A. (Cumulative Grad Point Assessment) secured by student of class XI.

**Objectives of the Study**

This paper was is an attempt to achieve the following objectives:

- 1.To ascertain the relationship of metacognition of X standard students of C.B.S.E. Board with their Academic Achievement in case of (i) total number of students (ii) Male (iii) Female (iv)General Category and (v) Reserved Category students.

**Hypotheses of the Study**

The following null hypotheses were formulate for the study.

1. There is no significant relationship between Metacognition and Academic

Achievement of XI standard of Male students of C.B.S.E. Board.

2. There is no significant relationship between Metacognition and Academic

Achievement of XI standard Male students of C.B.S.E. Board.

3. There is no significant relationship between Metacognition and Academic

Achievement of XI standard Female studentsstudents of C.B.S.E. Board.

4. There is no significant relationship between Metacognition and Academic

Achievement of XI standard General category students of C.B.S.E. Board.

5. There is no significant relationship between Metacognition and Academic

Achievement of XI standard Reserved category students of C.B.S.E. Board.

**Method**

Normative Survey method was used for present study.

**Sample**

A sample of 84 students (Male and Female) of XI standard belonging to C.B.S.E Board Schools from Meerut zone was selected for the present study.

**Research Tool**

Metacognition Inventory has been used for present study which constructed and standardized by Dr.PunitaGovil. This Metacognition Inventory consist of 30 statements. All the statements are positive and categorized under two dimension one dimension has 13 statements and the second dimension has 17 statements. The reliability co-efficient calculated by cronbach alpha co-efficient and test-retest which were found 0.85 and 0.82. The content validity assessed by expert, which was satisfactory.

**Statistical Techniques**

Perason product movement co-efficient of correlation technique was employed to examine the relationship between metacognition and academic achievement.

**Analysis and Interpretation of Data**

For analyzing the data correlation statistical technique was used.

**Table 1:** Coefficient of correlation between Metacognition and Academic of Total Number of Students.

Variables	N	Mean	r	Level of significance
Metacognition	84	84.04	0.19	0.05*
Academic Achievement	84	8.31		

Table 1 reveals that correlation between metacognition and Academic Achievement of XI standard students of C.B.S.E. Board is positive and significant. The obtained value of ‘r’ 0.19 is significant at 0.05 level of confidence. It can be said that metacognition plays an important role in academic field. Hence the hypothesis is rejected.

**Table 2:** Coefficient of correlation between Metacognition and Academic Achievement of Male Students.

Variables	N	Mean	r	Level of significance
Metacognition	53	85.47	0.12	0.05
Academic Achievement	53	7.89		

Table .2 reveals that correlation between metacognition and Academic Achievement of XI male students of C.B.S.E Board is positive and significant. The obtained value of 'r' 0.12 is significant at 0.05 level of confidence. In other words academic achievement of male students correlated positively with Metacognition. Hence the hypothesis related to this objective is rejected.

**Table 3:** Coefficient of correlation between Metacognition and Academic Achievement of female students.

Variables	N	Mean	r	Level of significance
Metacognition	31	87.54	0.37	0.01
Academic Achievement	31	8.5		

Data reported in Table 3 that correlation between Metacognition and Academic Achievement of XI standard female students of C.B.S.E. Board is positive in nature and significant. The obtained value of 'r' 0.37 is significant at 0.01 and 0.05 level. Magnitude of correlation is moderate which indicate that performance in academic field is correlated in a better way. Hence the hypothesis is related to this objective is rejected.

**Table 4:** Coefficient of Correlation between Metacognition and Academic Achievement of general category students.

Variables	N	Mean	r	Level of significance
Metacognition	31	89.03	0.262	0.05
Academic Achievement	31	8.1		

Table 4 reveals that correlation between Metacognition and Academic Achievement of XI standard General Category Students of C.B.S.E. Board is positive and significant. The obtained value of 'r' 0.262 is significant 0.05 level. Magnitude of correlation is low. As a result academic performance is positively correlated with metacognition. Hence, the hypothesis is related to this objective is rejected.

**Table 5:** Coefficient of correlation between Metacognition and Academic Achievement of Reserved Category Students.

Variables	N	Mean	r	Level of significance
Metacognition	53	89.07	0.29	0.01
Academic Achievement	53	7.7		

Table No.1.5 reveals that correlation between metacognition and academic achievement of XI standard reserved category students of C.B.S.E Board is positive and significant. The obtained value of 'r' 0.29 is significant at both level 0.01 and 0.05 level. Results indicate that performance in academic field is correlated in better way. Hence, the hypothesis is related to this objective is rejected.

### Discussion

Although the concept of Metacognition is still in the state of in fancy, yet a large number of researches conducted in this area have proved its efficiency. Experimental evidence of the studies carried out by Goh (1997), Kramarski (1997), Swarup (1999), Mevarech (1996, 1997 and 1999), Antonietti (2000) and other support the notion that high Metacognition level are associated with best performance.

### Findings of the study

The major findings of the present study were

1. The present study reveal that a significant and positive relationship between Metacognitive ability and academic achievement of XI standard students of CBSE Board.
2. The present study reveal that a significant and positive relationship between Metacognitive ability and academic achievement of XI standard male students of CBSE Board.
3. The present study reveal that a significant and positive relationship between Metacognitive ability and academic achievement of XI standard female students of CBSE Board.
4. The present study reveal that a significant and positive relationship between Metacognitive ability and academic achievement of XI standard general category students of CBSE Board.
5. The present study reveal that a significant and positive relationship between Metacognitive ability and academic achievement of XI standard reserved category students of CBSE Board.

### Conclusion

The present study of correlation between metacognition and academic achievement has provided above findings, which are beneficial for educationist psychologist & educators. Present study would be attract our attention to make more skilled at using metacognitive strategies, students gain confidence and independent tendency as learners. Metacognition make to enable students to discover that understanding and transferring thinking process improves learning.

### Education Implication

The present study proved that there is positive correlation between metacognitive ability and academic achievement of X standard students of C.B.S.E. Board. Henceteacher should foster the metacognitive ability among the students to make them better learners. The various types of knowledge such as *declarative knowledge*, to have awareness about the factual information that knows, *procedural knowledge*; to follow systematic way of dealing

with problems or tasks, and *conditional knowledge*; to know how and when to use the procedure effective for solving the problem are necessary for meaningful learning so as to improve academic achievement.

All the subject sought be taught to the students by fostering metacognitive ability, to make them better in information management, to bring awareness about how to plan and monitor the activities towards the achievement of goals to understand the error that creep in while learning and to evaluate the progress in learning. This way of teaching through metacognitive abilities will improve the academic performance of the students and make them expert learner.

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