EFFECT OF METACOGNITIVE KNOWLEDGE ON ACADEMIC ACHIEVEMENT IN ENGLISH

DR. ANURADHA SINDHWANI [1], DR. RAKHI [2]

[1]Associate Professor, K.M.College of Education, Bhiwani, India,
[2] Lecturer, Vaish College of Education, Rohtak, India.

Abstract : The present study has been conducted to assess the effect of metacognitive knowledge on academic achievement of senior secondary school students. The method of the study was Descriptive survey. In the present study, 600 senior secondary school students in five districts of Haryana state constituted the sample. Cluster Random sampling technique was used to select the subjects from the population. Metacognitive Knowledge Scale prepared by the investigators has been used to collect the data. Academic achievement scores were taken from Achievement Test in English which was prepared and standardized by investigator herself. Descriptive statistics like Mean, Standard Deviation and 't' test was used to compare the groups. The findings of the study reveal that students having high metacognitive knowledge have better academic achievement than the students having average metacognitive knowledge; (ii) students having average metacognitive knowledge have better academic achievement than the students having low metacognitive knowledge; and students having high metacognitive knowledge have better academic achievement than the students having low metacognitive knowledge.

IndexTerms - **Academic Achievement, Metacognition, Metacognitive Knowledge, Metacognitive Awareness And Learning.**

I. INTRODUCTION

Metacognition refers to higher order thinking which involves active control over the cognitive processes engaged in learning. 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). Metacognition enables us to be successful learners and has been associated with intelligence (e.g., Borkowski, Carr, & Pressley, 1987; Sternberg, 1984, 1986a, 1986b)". Metacognition requires students to "externalize mental events" (Bransford, Brown, & Cocking, p. 67), such as what it means to learn, awareness of one's strengths and weaknesses with specific skills or in a given learning context, plan what's required to accomplish a specific learning goal or activity, identifying and correcting errors, and preparing ahead for learning processes.

Activities such as planning how to approach a given learning task, monitoring comprehension and evaluating progress towards the completion of a task are metacognitive in nature. Because metacognition plays a critical role in successful learning, it is important to study metacognitive activity and development to determine how students can be taught to better apply their cognitive resources through metacognitive control.

Meta-cognition enables students to benefit from instruction (Carr, Kurtz, Schneider, Turner & Borkowski, 1989) and influences the use and maintenance of cognitive strategies. While there are several approaches to meta-cognitive instruction, the most effective involve providing the learner with both knowledge of cognitive processes and strategies (to be used as meta-cognitive knowledge), and experience or practice in using both cognitive and meta-cognitive strategies and evaluating the outcomes of their efforts (develops meta-cognitive regulation).

1.1 Metacognitive Knowledge

Metacognitive knowledge concerns one's descriptive knowledge about the interplay between person, task, and strategy characteristics (Flavell, 1979).Metacognitive knowledge rests on a personal belief system that is built up from metacognitive experiences in the past and individual attributions of causes and consequences. Russell (2012) advises "that to increase their metacognitive abilities, students need to possess and be aware of three kinds of content knowledge: declarative, procedural and conditional."

Declarative knowledge is the "factual information that one knows; it can be declared—spoken or written. An example is to know the formula for calculating momentum in a physics class (momentum = mass times velocity)."

Procedural knowledge is "knowledge of how to do something, of how to perform the steps in a process; for example, knowing the mass of an object and its rate of speed and how to do the calculation".

Conditional knowledge is "knowledge about when to use a procedure, skill, or strategy and when not to use it; why a procedure works and under what conditions; and why one procedure is better than another. For example, students need to recognize that an exam word problem requires the calculation of momentum as part of its solution".

This notion of three kinds of knowledge applies to learning strategies as well as course content. When they study, students need the declarative knowledge that (1) all reading assignments are not alike; for example, a history textbook chapter with factual information differs from a primary historical document, which is different from an article interpreting or analyzing that document. They need to know that stories and novels differ from arguments. Furthermore, they need to know that there are different kinds of notes taking strategies useful for annotating these different types of texts and (2) students need to

know how to actually write different kinds of notes (procedural knowledge) and (3) they need to know when to apply these kinds of notes when they study (conditional knowledge). Knowledge of study strategies is among the kinds of metacognitive knowledge and it too requires awareness of all three kinds of knowledge.Metacognitive knowledge (being declarative knowledge of self and others) is involved in the monitoring function that informs self awareness as well as awareness of cognition and metacognitive skills involved in strategy use for the control of cognition. Wei (2008) conducted a study based on the theories of meta-cognition and learner autonomy, and by analyzing the relationship between meta-cognitive awareness training and learner autonomy theoretically and statistically, the paper argued that in ELT (English Language Teaching) meta-cognitive awareness training should go before the training of meta-cognitive strategies,and only when students are conscious about meta-cognitive awareness can they strengthen their effort, motivation and persistence, seek assistance from peers and teachers when needed and provide self-instruction while learning and take responsibility for their learning. Caliskan and Sunbul (2011) found that learning strategies instruction increased awareness of strategy and metacognitive knowledge and it was effective in using metacognitive skills. Narang and Saini (2013) revealed that the major proportion of subjects with high level of metacognition also performed above average in academics. Further, analysis depicted that both the components of metacognition viz. 'Knowledge of Cognition' and 'Regulation of Cognition' significantly contributed towards the academic performance of the adolescents". Amin and Sukestiyarno (2015) showed that the ability of the students regarding the metacognitive knowledge is more dominant in the high and medium achievement scores. Talekar (2016)showed that indian students have average metacognitive knowledge, however, no significant difference were found in the metacognitive knowledge among the girls and boys in secondary schools in Mumbai.

In Indian conditions particularly there is a dearth of researches in this field. The research base for metacognitive learning makes it clear that it is very essential to know if this method of learning is just an educational fad, or whether it is a teaching approach that has great promise in academic achievement of students across the nation. So the present study focuses on the effectiveness of metacognitive knowledge based learning on academic achievement.

1.2 OPERATIONAL DEFINITION OF THE TERMS USED

Academic Achievement: The level of educational accomplishment in various subjects taught in educational institution.

Metacognition: The ability of an individual to have awareness and understanding of one's own thought processes.

Metacognitive Knowledge/ Metacognitive Awareness : The knowledge possessed by an individual about- oneself as a learner,planning & monitoring things and learning strategies is known as Metacognitive Knowledge.

II. OBJECTIVES

The present study purported to realize the following objectives:

1. To study and compare academic achievement in English of senior secondary school students having high metacognitive knowledge and average metacognitive knowledge.

2. To study and compare academic achievement in English of senior secondary school students having average metacognitive knowledge and low metacognitive knowledge.

3. To study and compare academic achievement in English of senior secondary school students having high metacognitive knowledge and low metacognitive knowledge.

III. HYPOTHESES

Based upon the above mentioned objectives, the following hypotheses were formulated:

Ho1   There is no significant difference in academic achievement in English of senior secondary school students having high metacognitive knowledge and average metacognitive knowledge.

Ho2   There is no significant difference in academic achievement in English of senior secondary school students having averagemetacognitive knowledge and low metacognitive knowledge.

Ho3   There is no significant difference in academic achievement in English of senior secondary school students having high metacognitive knowledge and low metacognitive knowledge.

IV. RESEARCH METHODOLOGY

4.1 Method

The present study attempts to explore the effect of metacognitive knowledge on academic achievement of senior secondary school students. So Descriptive Survey Method of research was employed.

4.2 Sample

The population of this study comprised of senior secondary school students in five districts of Haryana state. 600 students of senior secondary standard have been taken as sample of the study.Cluster random sampling technique has been used to select the subjects from the population.

4.3 TOOLS USED

- Metacognitive Knowledge Scale constructed by the investigators.

- Academic achievement scores have been taken from the Achievement test in English constructed by the investigator.

STATISTICAL TECHNIQUES USED

Descriptive statistics like Mean, Standard Deviation and 't' test has been used to compare the groups.
The results of the present study are given in table 1 to table 3 given below:

Table 1

Means, S.D.s and 't' ratio of academic achievement in English of high and average metacognitive knowledge

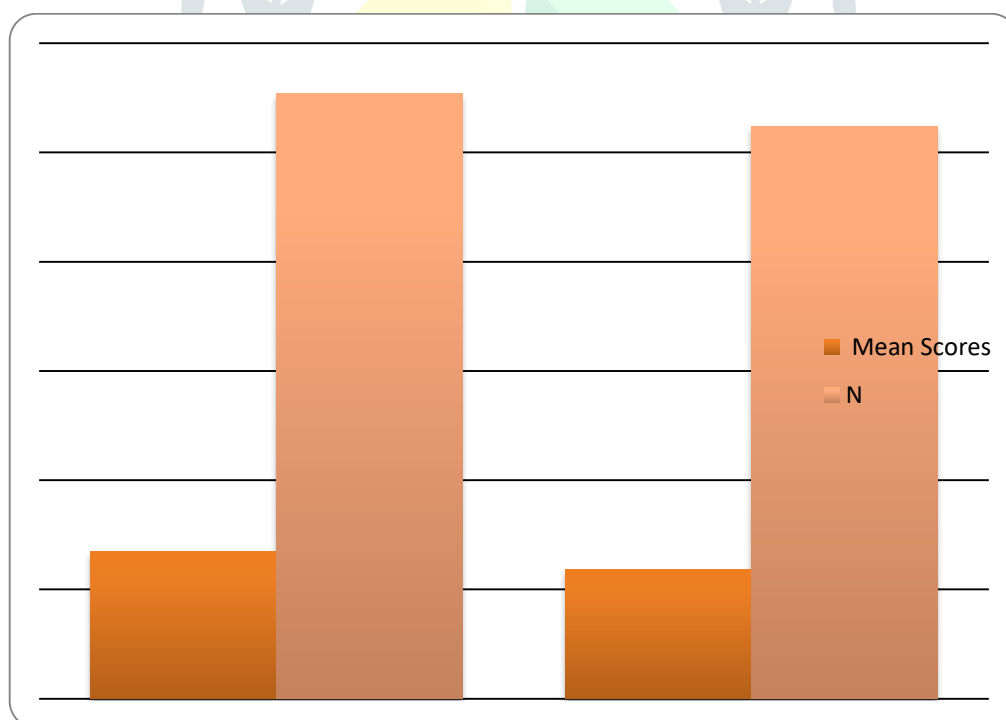| Variable	Group	Number	Mean	S.D.	't' ratios	Level of Significance
Academic Achievement in English	High knowledge about their own learning and learning unit	277	67.24	12.02	7.185	Significant at 0.01 level
	Average knowledge about their own learning and learning unit	262	59.29	13.63		

Fig. 1: **Mean scores of academic achievement in English of students having high and average metacognitive knowledge**

Interpretation

A scrutiny of Table 1 indicates that the mean and SD scores of academic achievement in English of students having high metacognitive knowledge and average metacognitive knowledge are (67.24±12.02) and (59.29±13.63) respectively. The 't' value is 7.185 which is significant at 0.01 level. It depicts that students having high and average metacognitive knowledge differ significantly on academic achievement in English. Further mean score of students having high metacognitive knowledge is higher than the students having average metacognitive knowledge. It indicates that students having high metacognitive knowledge about their own learning and learning unit had better academic achievement in English than the students having average metacognitive knowledge about their own learning and learning unit. Thus the hypothesis framed earlier, "There is no significant difference in academic achievement in English of senior secondary school students having high metacognitive knowledge and average metacognitive knowledge.

Table 2

Means, S.D.s and 't' ratio of academic achievement in English of average and low metacognitive knowledge

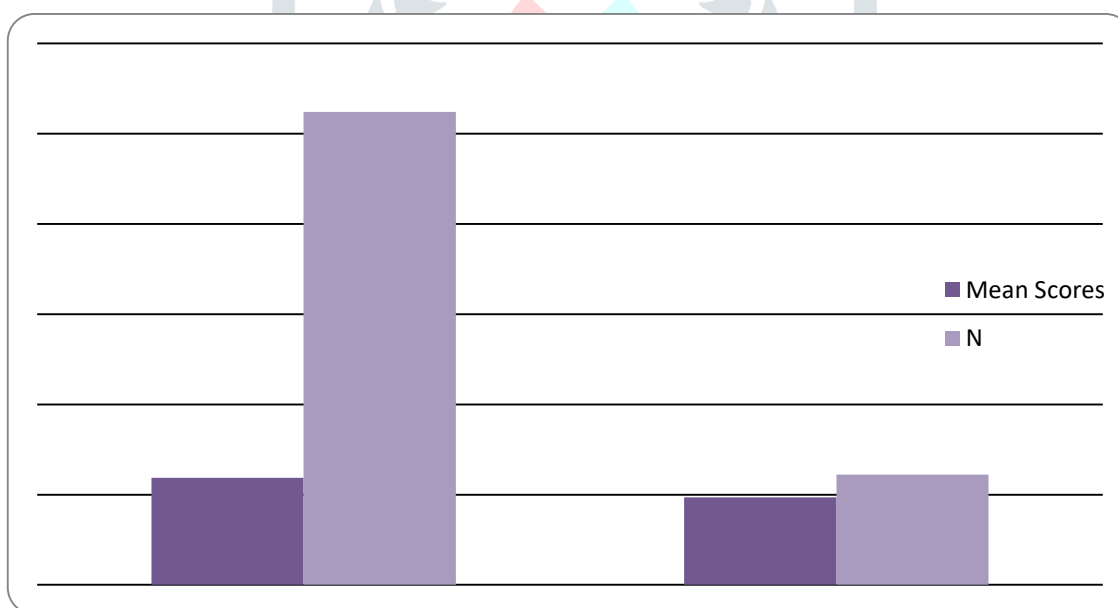| Variable	Group	Number	Mean	S.D.	't' ratios	Level of Significance
Academic Achievement in English	Average knowledge about their own learning and learning unit	262	59.29	13.63	5.410	**Significant at 0.01 level**
	Low knowledge about their own learning and learning unit	61	48.47	15.79		

Fig. 2:   **Mean scores of academic achievement in English of students having average and low metacognitive knowledge**

Interpretation

Table 2 indicates that the mean and SD scores of academic achievement in English of students having average metacognitive knowledge and low metacognitive knowledge are (59.29±13.63) and (48.47±15.79) respectively. The 't' value is 5.410 which is significant. It depicts that students having average and low metacognitive knowledge about their own learning and learning unit differ significantly on academic achievement in English. Further mean score of students having average metacognitive knowledge is higher than the students having low metacognitive knowledge It indicates that students having metacognitive knowledge had better academic achievement in English than the students having low metacognitive knowledge. Thus the hypothesis framed earlier, "There is no significant difference in academic achievement in English of senior secondary school students having averagemetacognitive knowledge and metacognitive knowledge" is not retained.

Table 3

Means, S.D.s and 't' ratio of academic achievement in English of high and low metacognitive knowledge

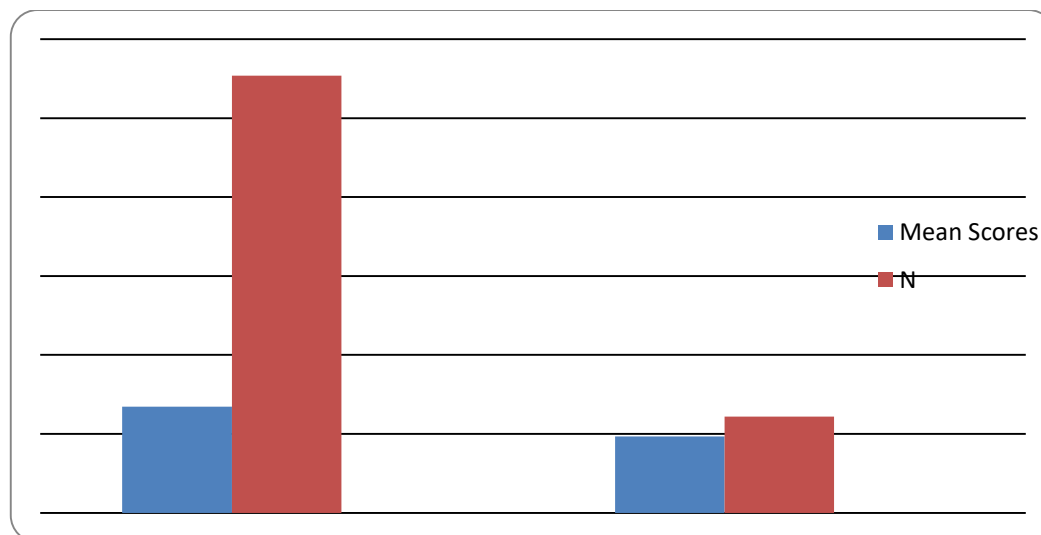| Variable	Group	Number	Mean	S.D.	't' ratios	Level of Significance
Academic Achievement in English	High knowledge about their own learning and learning unit	277	67.24	12.02	10.382	Significant at 0.01 level
	Low knowledge about their own learning and learning unit	61	48.47	15.79		

Fig. 3:　**Mean scores of academic in English achievement of students having high and low metacognitive knowledge**

Interpretation

A scrutiny of Table 3 indicates that the mean and SD scores of academic achievement in English of students having high metacognitive knowledge and low metacognitive knowledge are (67.24±12.02) and (48.47±15.79) respectively. The 't' value is 10.382 which is significant. It depicts that students having high and low metacognitive knowledge differ significantly on academic achievement in English. Further mean score of students having high metacognitive knowledge is higher than the students having low metacognitive knowledge. It indicates that students having high knowledge about their own learning and learning unit had better academic achievement in English than the students having low knowledge about their own learning and learning unit. Thus the hypothesis framed earlier, "There is no significant difference in academic achievement in English of senior secondary school students having high metacognitive knowledge and low metacognitive knowledge" is not retained.

FINDINGS OF THE STUDY

1.　It was found that students having high metacognitive knowledge had better academic achievement in English than the students having average metacognitive knowledge.

2.　It was found that students having average metacognitive knowledge had better academic achievement in English than the students having low metacognitive knowledge.

3.　It was found that students having high metacognitive knowledge had better academic achievement in English than the students having low metacognitive knowledge.

CONCLUSION

Metacognitive knowledge plays a key role in a learner's self-regulation of learning, building autonomy upon which even collaborative work thrives. Greater understanding of one's own learning can include seeing how it varies across contexts. This is a crucial element in what is often taken for granted by educators - the transfer of learning. Learners may sometimes have a range of strategies but not use them in learning situations. Students with metacognitive knowledge are more likely to recognize the applicability of a strategy in a specific learning situation and become effective learners. Metacognitive knowledge promotes the versatile learner, therefore, it has substantial effect on academic achievement.

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[17] Wenden (1998 p34) described 'metacognitive knowledge' as the 'facts learners acquire about their own cognitive processes as they are applied and used to gain knowledge and acquire skills in varied situations'. It is the knowledge we gain from the experience of doing things.