

A STUDY OF METACOGNITIVE AWARENESS OF HIGH ACHIEVERS, AVERAGE AND LOW ACHIEVERS OF CENTRAL SCHOOL STUDENTS

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Abstract

Education is a central part of any society, it is a thousand times better to have common sense without education than to have education without common sense. For Alvin Toffler, the illiterate of the 21st century will not be the ones who do not know how to read and write but rather than ones that will not be able to learn, unlearn and relearn. For the advancement in education, it would be essential to develop how to think process, the consciousness and regulation of learning strategies called metacognition.

Metacognition is defined most simply as “thinking about thinking.” Metacognition consists of two components: knowledge and regulation. Metacognitive knowledge includes knowledge about oneself as a learner and the factors that might impact performance, knowledge about strategies, and knowledge about when and why to use strategies. Metacognition is associated

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with planning; monitoring, evaluating and repairing performance. Designers of eLearning systems can improve the quality of their environments by explicitly structuring the visual and interactive display of learning contexts to facilitate metacognition. The present study has covered 500 samples with 2 districts of the Karnataka in central school students in relation to High, under and low achievers in the schools. Achievements are similarly changes in the two central schools.

The present study reveals that there is significance difference between high achievers with respect to Metacognitive awareness and its dimensions as compared with low achievers and Average achievers. It can be concluded that high achievers are possessed with high level meta cognitive awareness along with its dimensions as compared with low achievers and average achievers.

1. Introduction: Concept of Metacognitive Awareness

One of the hallmarks of psychological and educational theories and researches on learning is the emphasis on helping students to become more knowledgeable and responsible for their own cognition. Researchers agree that while growing student's become aware of their own thinking as well as more knowledgeable about cognition in general. Furthermore, as they act on this awareness they tend to learn better. The labels for this general developmental trend vary from theory to theory, but they include the development of metacognitive knowledge, metacognitive awareness, self-regulation, meta knowledge, Meta planning, meta monitoring and meta evaluation.

Cognitive Process

Cognition with refers to the higher processes involved in understanding and dealing with the world around us in the foundation on which all the experiences of the child have to be built(Gourgey,1980. Cognition can be defined as the process of information that the environment that is received through the senses cognition refers to mental activity and behavioural through

which knowledge of the world is attained and processes includes perception, memory and thinking.

Metacognition is a broadly defined concept incorporating cognitive process that refer to monitors or controls any aspect of cognition. It is now seen as a central contributor to many aspects of cognition including memory, attention, communication, problem solving and intelligence with important application education

Definitions of Metacognition

Ormord, (2006): A recent definition describes metacognition as one's knowledge and beliefs about one's own cognitive processes and one's resulting attempts to regulate those cognitive processes to maximize learning and memory.

➤ **Metacognition** – Thinking about thinking (Fogarty, 1994), or knowing about knowing (Metcalfe & Shimamura, 1994).

➤ **Metacognitive awareness** – Relates to an individual's awareness of where they are in the learning process, their knowledge about content knowledge, personal learning strategies, and what has been done and needs to be done (Wilson, 1999). Metacognitive awareness, for the purposes of this study, is defined as the ability to be a self-reflective and self-regulated learner who considers and comprehends her cognitive processes (Day, 1994). She is able to understand and use self-knowledge about cognitive strengths and weaknesses to develop additional skills and move towards intellectual maturity. She builds the ability to think about and comprehend how she approaches learning as well as the ability to plan, monitor, and evaluate her learning. These skills aid students in reading comprehension, writing, memory, problem solving, and related areas of education (Joseph, 2006).

Assessment of Metacognition

Metacognitive assessment – engaging in a genuine interest in understanding students thinking – offers a novel way, through dialogue, of getting inside of student. The activities of strategy selection and application include those concerned with an on-going attempt to plan, check, monitor, select, revise, evaluate etc. Metacognition is stable in that learner initial decision derives from the pertinent fact about their cognition through years of learning experience. It is

also situated in the sense that it depends on learner's familiarity with the task, motivation, emotion and so forth. To enhance learning to the fullest and students acquire integrate learning skills, learners to be aware of themselves as vibrant self-regulatory organisms who can consistently and deliberately achieve specific goals (**Kluwe, 1982**).

Need of the study:

A few studies have attempted to measure metacognition in a way that is more connected to in-school learning. For example, **Hennessey (1999)** studied metacognition in the context of school science. Students working in collaborative groups were taught to represent their science conceptions graphically, and were expected to be able to perform the following skills:

- State their own beliefs about the topic
- Consider the reasoning used to support their beliefs
- Look for consistency among their views
- Explore the implications of their views over a wide range of activities while looking for commonalities
- Explicitly refer to their own thinking or learning

Review of related literature: The investigate has reviewed previous investigations where following referred are as follows

JirapaAbhakorn (2014) conducted a study on investigating the use of student portfolios to develop students' metacognition in English as foreign language learning. The results indicated that the understanding of metacognition development through a mediated tool in language learning, and suggest EFL teachers and language educators to be aware of the importance of metacognition and reflective skills training in order to reach the full potential of the portfolio approach in language learning to be realized.

Narang and Saini (2013) conducted a study, "Metacognition and Academic Performance of Rural Adolescents". The present study was undertaken to study the impact of metacognition on academic performance of rural adolescents (13-16 years). The study was carried out in rural schools of block-I, Ludhiana District. The sample comprised of 240 rural adolescents equally

distributed over four grades (7th, 8th, 9th and 10th grade), two sexes and two socio-economic groups i.e. middle and low socio-economic group. Results 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.

Sindhvani and Sharma (2013) conducted a study, “Metacognitive Learning Skills.” They pointed out that to become self-directed learners, students must learn to assess the demands of the task, evaluate their own knowledge and skills, plan their approach, monitor their progress and adjust their strategies as needed. Students must be able to accurately reflect on what they do and don't know and how they would approach solving new organisation problems. Studies have shown that once a child is able to come up with his own way of organising items for study, he will achieve far greater results on tests (in reading, writing, math, science, bilingual education, test prediction, etc.). It is therefore imperative that effective study skills, with metacognition as the goal, be taught and monitored to children so that they may become more facile with finding unique problem-solving strategies in future. Unfortunately, these metacognitive skills tend to fall outside the content area of most courses and consequently they are often neglected in instruction.

Abdolhossini (2012) reported the effects of cognitive and meta-cognitive methods of teaching mathematics subject for high school students. The results showed that cognitive and meta-cognitive methods of teaching had positive effects on educational progress of male and female students. Nevertheless, no positive relation was observed between the boys' and girls' average grades.

Andrew (2010) undertook a study on the Influence of cognitive and metacognitive strategies on deep learning and concluded that metacognitive strategies help children of all ages to develop highly critical cognitive functioning ability, which results in deep understanding and develop problem solving skills.

Martin (2008) in the study on the use of cognitive strategies by high school social studies students reveals that cognitive strategy increases student's knowledge and motivation.

Furthermore, it suggests that teachers need to stress the relevance of cognitive strategies to students and use more high level thinking on class work and exam.

Cook (2006) stated that the literature on metacognition indicated that metacognitive awareness is frequently related to better performance. He questioned, however, whether students were aware that they were consciously monitoring their performance, or even using metacognitive strategies to solve problems. He conducted two studies. The first study showed that student reading performance was faster and more accurate when students used such discrimination strategies as re-reading and focusing on specific semantic features during the initial reading. The second study showed that students were, indeed, aware of their strategies, and frequently focused on and evaluated their solutions to problem solving.

Cetinkaya&Erktin (2002) showed that awareness and cognitive strategies subscales of the inventory were significantly and positively correlated with reading comprehension. Self-checking and evaluation subscales of the inventory were significantly and positively correlated with science course grades of the gifted students. No significant correlations were found between the metacognition scores and the achievement in the Turkish, Science and Mathematics courses.

Mokhatari&Reichard (2002) had developed an inventory to assess student's metacognitive awareness of reading strategies for the students of grade 6 to 12. Subscales of the inventory were Global Reading Strategies, Problem Solving Strategies and Support Reading Strategies.

Maqsd(1997) studied effects of metacognitive skills and nonverbal ability on academic achievement of high school pupils. The study reports the findings of two experiments conducted with South African senior high school students to examine the relationships of metacognitive strategies and nonverbal reasoning ability to test performance in mathematics and English comprehension. The study suggests that teaching metacognitive strategies to students who lack such skills may improve their academic performance.

McLain, Gridley, & McIntosh (1991) had evaluated metacognitive reading awareness inventory named Index of Reading Awareness prepared by Jacobs & Paris in 1987, for the students belong to grade 3 to 5. Subscales of the scale were Evaluation, Planning, Regulation and Conditional

Knowledge. The results indicated that the scale should be used cautiously as a measure of metacognition in reading. Thomas (2003) had developed the metacognition orientation learning environment scale-Science, for the students of age group of 14 years to 17 years. Subscales of the MOLES-S were 1) Metacognitive demands, 2) Student discourse, 3) Student-Teacher discourse, 4) Student voice, 5) Distributed control, 6) Teacher encouragement and Support, 7) Emotional Support.

Schmitt (1990) developed the Metacomprehension Strategy Index to determine the student's levels of strategy awareness namely: predicting, verifying, previewing purpose setting, self-questioning, drawing from background knowledge, summarizing and applying fix-up strategies. The results shown that there was lack of significant difference in the categories as a whole: there were a few questions that revealed differences between the children who had successfully completed Reading Recovery and the cohort sample group with respect knowledge about less effective or item oriented strategies.

Overview of the Literature

Studies related to the metacognitive awareness about the Strategy Index to determine the student's levels of strategy awareness, reading awareness inventory named Index of Reading Awareness, skills and nonverbal ability on academic achievement of high school pupils., awareness is frequently related to better performance, student portfolios to develop students' metacognition in English as foreign language learning.

There were no studies conducted on central school students of High achievers, average achievers and Low achievers. Thus, it is evident the number of researches on students, in relation to variables like metacognition, and its dimensions such as meta knowledge, meta planning, meta monitoring, meta regulations, and meta evaluation. Therefore, the investigator undertook this study on metacognition high achievers average achievers, and low achievers of central school students. The investigator has made a humble attempt to fill up the research gap by undertaking the present study on metacognitive awareness on central school students of high, low and average achievers.

Objectives of the Study: Objectives of the studies are as follows

To study whether there is significance difference between different achievers (High, Average and Low) of central school students with respect of meta cognitive awareness and its dimensions (i.e. meta knowledge, self-planning, self-monitoring, self-evaluation and self-regulation).

Hypothesis:In pursuance of above stated objectives following hypothesis were formulated
There is no significance difference between different achievers (High, Average and Low) of central school students with respect of meta cognitive awareness and its dimensions (i.e. meta knowledge, self-planning, self-monitoring, self-evaluation and self-regulation).

The Methods of Research:The survey method of research use for the present study

Statistical Techniques Used for the Study:To achieve this hypothesis, the one-way ANOVA test and Tukeys Multiple Post hoc techniques was used. Interpreted all data and inferences were drawn.

Tools Used for the Study: Metacognitive scale was used to assess the Metacognitive Awareness of the Central School Students. The scale was constructed and developed by the Investigator by using systematic procedure for the construction of Tools. The Scale has five dimension such as Meta Knowledge, Self-Planning, Self-monitoring, Self Evaluation and Self-Regulation which are all found to be significantly inter related each other. The final version of the scale consists of 50 statements of which some are negative and positive statements. the Investigator has computed reliability and validity quotients which are found to be significant.

Limitations of the Study: The present study has following the limitations

- The study is restricted to the students of central schools of Bidar and Belgaum district of the Karnataka
- The study is limited to the sample of 500 students of which high achievers, low achievers and average achievers which is identified by Mean High achievers, Mean Average Achievers and Mean are Low Achievers
- The study is restricted to assess the Metacognitive awareness of high achievers Low achievers and average achievers

➤ The study has conducted only on High achievers, average achievers and low achievers in central school

Sample of the Study: The sample of this present study involves 500 students of central schools of the Bidar and Belgaum districts.

Data Analysis and Interpretation

Table:1 Results of one-way ANOVA Test Between Different Achievers (High, Average and Low) with respect to Meta Cognitive Awareness and its Dimensions.

Variable	Sources of variation	Degrees of freedom	Sum of squares	Mean sum of squares	F-value	P-value	Signi.
Meta cognitive awareness	Between achievers	2	6425.59	3212.7956	801.1996	0.0001	<0.05, S
	Within achievers	497	1992.96	4.0100			
	Total	499	8418.55				
Meta knowledge	Between achievers	2	364.90	182.4519	61.3399	0.0001	<0.05, S
	Within achievers	497	1478.30	2.9744			
	Total	499	1843.20				
Self planning	Between achievers	2	315.14	157.5677	70.4647	0.0001	<0.05, S
	Within achievers	497	1111.35	2.2361			
	Total	499	1426.49				
Self monitoring	Between achievers	2	35.04	17.5205	17.7416	0.0001	<0.05, S
	Within achievers	497	490.81	0.9875			
	Total	499	525.85				
Self evaluation	Between achievers	2	358.43	179.2159	54.6658	0.0001	<0.05, S
	Within achievers	497	1629.36	3.2784			
	Total	499	1987.79				
Self regulation	Between achievers	2	377.68	188.84	50.0541	0.0001	<0.05, S
	Within achievers	497	1875.05	3.77			
	Total	499	2252.73				

From the results of the above table, it can be observed that

- A significant difference was observed between different achievers (High, Average and Low) with respect to metacognitive awareness ($F=801.1996$, $p<0.05$) at 0.05 level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the different achievers (High, Average and Low) have different metacognitive awareness.
- A significant difference was observed between different achievers (High, Average and Low) with respect to meta knowledge ($F=61.3399$, $p<0.05$) at 0.05 level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the different achievers (High, Average and Low) have different Meta knowledge.
- A significant difference was observed between different achievers (High, Average and Low) with respect to self-planning ($F=70.4647$, $p<0.05$) at 0.05 level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the different achievers (High, Average and Low) have different self-planning.
- A significant difference was observed between different achievers (High, Average and Low) with respect to self-monitoring ($F=17.7416$, $p<0.05$) at 0.05 level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the different achievers (High, Average and Low) have different self-monitoring
- A significant difference was observed between different achievers (High, Average and Low) with respect to self-evaluation ($F=54.6658$, $p<0.05$) at 0.05 level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the different achievers (High, Average and Low) have different self-evaluation
- A significant difference was observed between different achievers (High, Average and Low) with respect to self-regulation ($F=50.0541$, $p<0.05$) at 0.05 level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the different achievers (High, Average and Low) have different self-regulation.

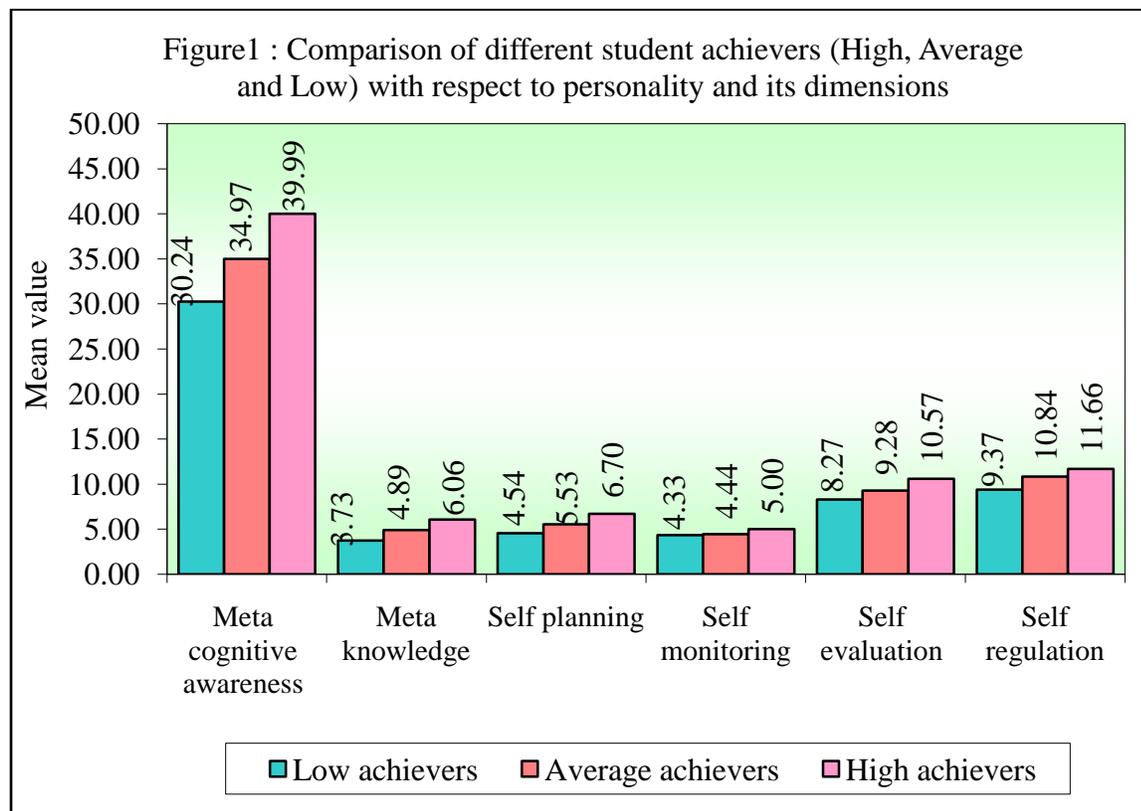
Table:2 Pair Wise Comparison of Different Student Achievers (High, Average and Low) with respect to personality and its dimensions scores by Tukeys multiple posthoc procedures.

Variable	Achievers	Low achievers	Average achievers	High achievers
Meta cognitive awareness	Mean	30.24	34.97	39.99
	Low achievers	-		
	Average achievers	P=0.0001*	-	
	High achievers	P=0.0001*	P=0.0001*	-
Meta knowledge	Mean	3.73	4.89	6.06
	Low achievers	-		
	Average achievers	P=0.0001*	-	
	High achievers	P=0.0001*	P=0.0001*	-
Self planning	Mean	4.54	5.53	6.70
	Low achievers	-		
	Average achievers	P=0.0001*	-	
	High achievers	P=0.0001*	P=0.0001*	-
Self monitoring	Mean	4.33	4.44	5.00
	Low achievers	-		
	Average achievers	P=0.0001*	-	
	High achievers	P=0.0001*	P=0.0001*	-
Self evaluation	Mean	8.27	9.28	10.57
	Low achievers	-		
	Average achievers	P=0.0001*	-	
	High achievers	P=0.0001*	P=0.0001*	-
Self regulation	Mean	9.37	10.84	11.66
	Low achievers	-		
	Average achievers	P=0.0001*	-	
	High achievers	P=0.0001*	P=0.0001*	-

*p<0.05

From the results of the above table it can be revealed the following

- The high achievers have significant higher metacognitive awareness as compared to average achievers and low achievers.
- The high achievers have significant higher meta knowledge as compared to average achievers low achievers.
- The high achievers have significant higher self-planning as compared to average achievers and low achievers.
- The high achievers.Have significant higher self-monitoring as compared to average achievers and low achievers.
- The high achievers have significant higher self-evaluation as compared to average achievers and low achievers.
- The high achievers have significant higher self-regulation
- as compared to average achievers. The mean are also presented in the following figure.



Findings of the study:

- The different achievers (High, Average and Low) have different metacognitive awareness.
- The different achievers (High, Average and Low) have different meta knowledge
- The different achievers (High, Average and Low) have different self-planning
- The different achievers (High, Average and Low) have different self-monitoring
- The different achievers (High, Average and Low) have different self-evaluation.
- The different achievers (High, Average and Low) have different self-regulation.

From the results of the above table, we can be concluded that,

- The high achievers have significant higher metacognitive awareness as compared to average achievers and low achievers.
- The high achievers have significant higher meta knowledge scores as compared to average achievers and low achievers.
- The high achievers have significant higher self-planning as compared to average achievers and low achievers.
- The high achievers have significant higher self-monitoring as compared to average achievers and low achievers.
- The high achievers have significant higher self-evaluation as compared to average achievers and low achievers.
- The high achievers have significant higher self-regulation as compared to average achievers and low achievers.

Educational Implications of the Study:

The study is aimed to study the metacognitive awareness in meta-knowledge, meta-monitoring, meta planning, meta-evaluation, meta regulation are associated with academic achievements of the central school students. The factors are contributing with academic achievement. The study may be useful to students to foster the metacognitive awareness, meta memory, meta planning, meta monitoring, meta regulation, meta evaluation, in turns it helps in improving the academic achievement of learners. From the study, it is found that independent variables are influencing the academic achievement of students of central schools. Hence the students should be given training and awareness programme through co-curricular and curricular

experiences to improve their metacognitive awareness which are major contributing factors to academic achievement of central school students. The students should also be encouraged and motivated to take up all school subjects confidently. They should be taught to imbibe good study habits and favourable attitude towards school in turn which promotes their metacognitive awareness.

Based on the personal teaching experience of the researcher, findings of the present study, the students should be counselled to overcome the examination fear and general phobia about the different school subjects. Student should be made active participation in teaching learning process and not nearly passive listeners and students should be made to understand clearly the objectives of the different school subjects.

Conclusion:

Self-regulation and self-evaluation is better than meta knowledge and meta monitoring in the central school students in relation to academic achievement of High achievers are greater than low and average achievers from the data. Generally low achievers are behind than with their academic achievement in central school.

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