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Metacognitive Awareness and Its Relation to Academic Performance Among Learners: A Review Paper

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ABSTRACT

Becoming aware of one's own thought processes is known as metacognitive awareness. The awareness of one's thinking and the techniques one applies is known as metacognition. It helps students be more aware of what they are doing, why they are doing it, and how their learning abilities may be applied differently in other contexts. The study was conducted to analyze Metacognitive Awareness and its relation with Academic performance at different levels (primary, secondary, high secondary, undergraduate, postgraduate, B.Ed.). It is qualitative research. This study reviewed the research on Metacognition Awareness in the last ten years. The Researcher did not use primary data only used secondary data. The Researchers have collected all the secondary data from the previous research paper. Then, the Researcher analyze and interpreted all the collected data. The study found that overall students' Metacognitive Awareness was average and high, and also found a positive and strongly significant correlation between Metacognitive Awareness and Academic Achievement.

Keywords: Metacognitive Awareness, Academic Performance

INTRODUCTION

Metacognition is a higher-order thinking process. Metacognition is thinking about own's thinking. This process involves awareness and control of own's cognition. The term Metacognition comes from 'meta' it means beyond. Etymologically metacognition is beyond knowing. John Flavell introduced the term 'Metacognition' in early 1970. Flavell was the first to use the term 'Metamemory' and stated that each person has the ability to store and retrieve information in their memory. "Metacognition refers to one's knowledge concerning one's own cognitive processes or anything related to them, e.g. the learning relevant properties of information or data. "I am engaging in metacognition if I notice that I am having more trouble learning A than B; if it strikes me that I should double-check C before accepting it as fact" (Flavell,1976).

When we think about how we are learning, adapting, and developing that thinking is called Metacognition. Actually, Metacognition is not a concern about what I learn, it concerns about how I learn, and how I develop myself.

"50% to 66% of the world's population engage in Metacognition" (Flavell,1979). Metacognition relates to learning (Veenman & Spans,2005) memory (Schwartz et al.2004) Intelligence (Swanson,1992; Song et al.2021), and problem-solving (Schwartz et al.2004). Metacognition consists of two levels which are object level and meta-level. The object level is the cognitive process of the own's thinking and the Meta level is the thinking about own's thinking process (Nelson & Narens, 1990). According to Flavell, two components of metacognition: knowledge of cognition and regulation of cognition. Knowledge of cognition means

knowing about own learning process and Regulation of cognition means doing about own learning process. This knowledge of cognition and regulation of cognition together consist of Metacognitive awareness. Brown (1977) declaration that cognitive awareness is in three categories as: planning, checking, and reviewing. Flavell (1979) declared that cognitive awareness is in three categories: self-knowledge, knowledge about tasks & strategic knowledge. Through Metacognitive Awareness, students can regulate and rethink their own's thinking processes (Trisna et al. 2018).

Objective:

- To find out the nature of metacognitive awareness among students.
- To find out the relationship between metacognitive awareness with students' academic performance.

METHODOLOGY

This is a Review Paper. This study reviewed the research on Metacognition Awareness in the last 10 years. The Researcher did not use any primary data, only used secondary data collected from various research papers. Researchers have reviewed 23 works of literature out of which 11 are Indian and 12 are Abroad. Then Researcher analyzed and interpreted all the collected data.

ANALYSIS AND INTERPRETATION

In this study, the researcher considered the primary, secondary, higher secondary, undergraduate, postgraduate, and B.Ed. students' respect to gender, locality, stream, type of management, and medium of instruction. Analyzing the various papers, the researcher explicates the following findings-

Table:1 According to Indian studies-

Author	Year	Sample	Findings
Jagadeewari et al	2014	445 class xi standard students	Findings regarding metacognitive awareness: The study's results show that Higher-Secondary students had a high level of metacognitive awareness, and there were significant differences in their metacognitive awareness levels depending on their gender (mean for males was 78.51 and for females was 81.18) and type of school management (mean for govt school 82.14 and govt aided 78.56). Furthermore, based on their residential locality and family income, it was discovered that there was no appreciable variation in their metacognitive awareness.
Satyadev	2015	526 middle, secondary, and senior secondary students	Findings regarding metacognitive awareness: According to this study, the metacognitive awareness inventory(total) mean score was 40.29, with a standard deviation of 6.37. The sample's score distribution ranged from 10 to 52. One eighth-grade kid received a score of 10, whereas the maximum score for the current sample was 52. Three students, out of the entire sample, received MAI scores below 20. In the MAI test, 297 participants took scores of 40 and above. All participants' metacognitive awareness varied from moderate to good. Finding regarding relationship with metacognitive awareness and academic performance: The total MAI score showed a slight (r=.101) but significant association with the SAT, indicating that self-awareness of one's own knowledge and abilities is related to scholastic accomplishment.
Indu et al	2015	1005 students in Coimbatore city	Findings regarding metacognitive awareness: This study shows students' metacognitive awareness is average to high. The study reveals substantial variations in gender (M=47.54 for males and M=45.51 for females) and medium of instruction (Tamil, M=47.27 and English, M=44.5). Also, it was discovered that there was no difference between nuclear (M=34.92) and joint (M=34.5) families.
Jaleel. et al	2016	180 secondary-level students of the Kottayam district	Findings regarding metacognitive awareness: This study shows that 36 students had a very low level of awareness, 36 students had low awareness, 42 students had average awareness, 31 students had high awareness and 35 students had very high awareness. Based on location, gender, and type of management, there are no appreciable differences in the metacognitive awareness of secondary-level school students
Talekar et al	2016	120 secondary-level students	Findings regarding metacognitive awareness: 25% of students have low metacognitive awareness, compared to 28% who have a high level and 47% of students have an average level.
Sabna et al	2016	100 higher-secondary students of the Malappuram district	Findings regarding metacognitive awareness: According to the study, most students in higher secondary schools have an average level of metacognitive awareness. The mean Metacognitive Awareness scores for girls are greater than those for boys, and it has also been demonstrated that urban school

			students have higher Metacognitive Awareness mean scores than rural school students. Based on gender and location, the study shows that 13 percent of students have high metacognitive awareness, 76 percent of students have average metacognitive awareness, and 12 percent of students have low metacognitive awareness. The mean Metacognitive Awareness scores depending on Gender and Location differ significantly from one another.
Dhyani. R	2018	140 primary-level students of the Dehradun district	Findings regarding metacognitive awareness: This study shows that 18 students had a very low level of awareness, 38 students had low awareness, 46 students had average awareness, 28 students had high awareness and 10 students had very high awareness. Based on location and gender, there are no appreciable differences in the metacognitive awareness of elementary school students.
Rangannavar. B et al	2018	500 students of the central school of the Bidan and Belgaum district	Findings regarding metacognitive awareness: With regard to metacognitive awareness, there was a statistically significant difference between High, Average, and Poor achievers ($F=801.1996$, $p<0.05$) at the 0.05 level of significance. High achievers exhibit a higher meta-cognitive awareness than average and low achievers.
Sonowal et al	2019	134 class xii students	Finding regarding relationship with metacognitive awareness and academic performance: According to the study's findings, there is no association between knowledge of cognition and academic achievement, but there is a favorable relationship between metacognitive awareness and academic achievement as well as regulation of cognition. Regarding gender, management style, location, and instructional medium, Upper Secondary level Arts Stream students are not very different from one another.
Mithaiwala et al	2020	66 class eleven students of N.N. Ramanathan Lyyer high school	Finding regarding relationship with metacognitive awareness and academic performance: The research discovered no discernible difference between higher secondary learners' metacognition awareness in the humanities and sciences. It was found that humanities students ($M=41.60$) comparatively have a higher level of metacognition awareness than science students ($M=36.18$). Metacognition Awareness and Achievement Motivation were found to be positively correlated. Also, students from both streams had different values on the dimensions of metacognition awareness and achievement motivation, with t values of 3.14 and 0.48, respectively.
Sonowal et al	2021	945 undergraduate students	Findings regarding metacognitive awareness: The skewness value of the Metacognitive Awareness of the Undergraduate students in the Dibrugarh District is (-0.29), which is negatively skewed towards the left. This means that more members of the group scored higher than the average score and that scores are concentrated at the high end of the scale (the right end) and spread out more gradually towards the low end (or left). On the other hand, Kurtosis' computed value is (0.07), which is positive and denotes that the distribution of scores is leptokurtic. Regarding Metacognitive Awareness, there are no appreciable differences between students in the Arts, Science, and Commerce streams, male and female, rural and urban, in the Dibrugarh District. Finding regarding relationship with metacognitive awareness and academic performance: The academic performance of undergraduate students in the Dibrugarh District is significantly correlated with their knowledge of cognition and regulation of cognition.

Table:2 According to Abroad studies:

Author	**Year**	**Sample**	**Findings**
Yen- ju-hou	2015	107 college students	Findings regarding metacognitive awareness: According to the research data, the mean of MAI score was 182.611 out of 260. The experimental groups outperformed the control group on both the knowledge of cognition factors (experimental: $M=60.70$, $SD=.780$; control: $M=57.36$, $SD=1.252$) and regulation of cognition factors (experimental: $M=125.43$, $SD=1.578$; control: $M=121.74$, $SD=2.529$) measures, according to the average MAI scores.
Dilek et al	2018	218 pre-service EFL teachers	Findings regarding metacognitive awareness: Males and females both have mean metacognitive awareness scores that are slightly higher for females ($M=1.92$) than for males ($M=1.87$). The independent t-test results reveal that there is no difference in the level of metacognitive awareness between pre-service male and female instructors ($t=1.20$). Pre-service EFL Teachers' Metacognitive Awareness and Critical Thinking Skills.
Ramadhanti. D	2019	22 final-level students of STKIP PGRI West Sumatra.	Findings regarding metacognitive awareness: According to this study, 7 students exhibited little metacognitive awareness while 15 students had high levels of it.
Taran et al	2019	281 senior high school students	Findings regarding metacognitive awareness: According to the study's findings, senior high school pupils had a high level of metacognitive awareness. It also showed that senior high school pupils had modest attitudes toward solving scientific problems. Finding regarding relationship with metacognitive awareness and academic performance: There was a strong correlation between the senior high school students' metacognitive e awareness and their attitudes toward scientific problem-solving. Furthermore, science students' views about problem-solving were most significantly influenced by the area of regulation of cognition.

Abdelrahman. R.M	2020	200 college students at Ajman University	Findings regarding metacognitive awareness: As per metacognitive awareness, women performed better than men ($Female_m$ = 79.1, $Male_m$ = 65.5, $t_{(98)}$ = 3.1708, p > 0.01). Finding regarding relationship with metacognitive awareness and academic performance: An important factor in learning success is metacognitive awareness, which is also a highly effective technique for measuring academic achievement.
Bakkaloglu. S	2020	399 third, fourth, and fifth-grade students	Findings regarding metacognitive awareness: The metacognitive scale total scores of children in the third, fourth, and fifth grades were analyzed, and it was found that they were in the general middle-to-high range (= 26.67, S = 4.84). primary and secondary school students' metacognitive awareness does not differentiate in gender but significantly differentiates in the locality (urban, M=27.88/ rural, M=24.99). The metacognitive awareness scores of the fifth-grade children were higher than those of the other groups when the metacognitive awareness scores were compared by grade level.
Toraman et al	2020	501 seventh-grade students	Finding regarding relationship with metacognitive awareness and academic performance: The study found a significant positive association between students' performance in mathematical courses and metacognitive awareness (r=0.785, p.05). It can be claimed that math course achievement grew along with the level of metacognitive awareness.
Siddiqui et al	2020	1200 graduates and post-graduates	Finding regarding relationship with metacognitive awareness and academic performance: The results suggest a positive relationship between metacognition awareness and academic performance, which means that students with higher metacognitive awareness exhibit better academic achievement at the graduate and postgraduate levels. The findings also show that procrastination at the graduate and postgraduate levels significantly and negatively correlates with students' awareness of their metacognition processes. Lower levels of delaying behavior are the result of increased metacognition awareness.
Ramadhanti et al	2021	63 students	Findings regarding metacognitive awareness: According to the findings, as many as 25 children exhibited a high level of awareness, while 38 others had a moderate level. Finding regarding relationship with metacognitive awareness and academic performance: According to the range of correlation values of 0.812, the association between metacognitive awareness characteristics and the capacity to compose explanatory text is considerable and extremely strong. 66% of the ability to compose explanatory text is influenced by metacognitive awareness, and the other 44% is impacted by other factors. This demonstrates the significance of metacognitive awareness in writing.
Ozcakmak et al	2021	314 pre-service teachers' students	Findings regarding metacognitive awareness: This study's pre-service teachers had a high level of metacognitive awareness. The degrees of metacognitive awareness among pre-service instructors were not gender-specific (Male students (X = 201.11) & female students (X = 201.86). Finding regarding relationship with metacognitive awareness and academic performance: It was determined that academic success positively impacted their levels of metacognitive awareness. Also, it was discovered that the pre-service teachers were able to forecast, plan, monitor, and evaluate their own cognitive activity. It was also discovered that the individuals possessed the abilities to design, use, and monitor a technique that they anticipated would be successful for a problem they encountered, as well as knowledge of which learning strategies were beneficial and which were not. Several implications for the growth of pre-service teachers' metacognitive awareness were highlighted in light of these findings.
Krisdianata et al	2022	30 high school students	Findings regarding metacognitive awareness: The result shows that procedural knowledge was 27.7%, conditional knowledge was 14.2%, declarative knowledge was 35.1%, and the task was 17.3%. Similarly, senior high school students claimed that they were planning 14.4%, monitoring 24%, and evaluating 11.1%, all of which fall under the category of low level of comprehension. The findings indicated that high school learners displayed low metacognitive awareness and regulation when writing descriptive texts.
Tuononen et al	2023	462 third-year students	Findings regarding metacognitive awareness: The findings revealed that the student's scores on an understanding of cognition and regulation of cognition were both quite high. Finding regarding relationship with metacognitive awareness and academic performance: The deep approach received the highest marks from the students, followed by approaches to learning and unreflective learning, which received the lowest marks. A deep approach to learning and systematic study were favorably and statistically substantially connected with both the dimensions of metacognitive awareness (knowledge about cognition and regulation of cognition), while an unreflective approach was adversely correlated.

Interpretation:

Objective 1: To find out the nature of metacognitive awareness among students.

After analyzing (table.1), researchers found that most of the students' metacognitive awareness is at an average level (Satyadev, 2015; Dhyani, 2018; Sabna et al. 2016; Talekar, 2016). Only two studies found that higher secondary and undergraduate students have high levels of metacognitive awareness (Jagadaswari et al. 2014; Sonowal et al. 2021). The girls had higher

metacognition than boys (Sabna et al,2016; Jagadaswari et al. 2014), but one study revealed that males have higher metacognitive awareness than females (Indu, 2015).

After analyzing (table.2), researchers found that most of the students' metacognitive awareness is at a high level (Ramadanti, 2019; Taran et al. 2019; Ozcakmak et al. 2021; Tuononen et al. 2023). Two studies show that students' (3^{rd},4^{th},5^{th}, and high secondary) metacognitive awareness is moderate to high (Bakkaloglu, 2020; Ramadhanti et al 2021; Yen, 2015). Only one study revealed that high school students have low metacognitive awareness (Krisdianata et al. 2022). The females were high metacognition than males (Dilek et al. 2018; Abdelrahman, 2020) but other studies show no discrimination in metacognitive awareness with respect to gender (Bakkaloglu, 2020; Ozcakmak et al. 2021

Objective 2: To find out the relationship between metacognitive awareness with students' academic performance.

Previous research discovered a strong connection between metacognitive awareness and academic success (Satyadev, 2015; Rangannavar, 2018; Sonowal et al. 2019; Mithaiwala et al. 2020; Sonowal et al. 2021; Ramadanti, 2019; Toraman et al. 2020; Ozcakmak et al. 2021; Abdelrahman, 2020; Siddiqui et al. 2020). Other studies found that Metacognition Awareness and Achievement Motivation were found to be positively correlated (Mithaiwala et al. 2020). Researcher also show a strong correlation between senior high school students' metacognitive awareness and their attitudes toward scientific problem-solving (Taran et al. 2019).

DISCUSSION

Analyzing previous studies, it can be said that Metacognition is a developmental process. The metacognitive awareness of secondary level students is a little higher than primary level students, again high secondary, undergraduate, and postgraduate students have more high awareness than students at the secondary level. Students can learn what they already know and what they still need to work on using metacognitive activities. It promotes the growth of students' cognitive awareness. Metacognitive awareness also helps to increase students' achievement motivation (Mithaiwala et al. 2020).

The above findings show that Abroad student's high metacognitive awareness than Indian students. Both in India and Abroad, Metacognitive awareness has been shown to positively correlate with academic success. It also highly correlates with metacognitive awareness and students' attitudes toward scientific problem-solving (Taran et al.2019). Students know and use their metacognition, and they will develop their academic achievement.

CONCLUSION

Metacognitive Awareness makes students aware of their weaknesses and strengths, thereby enabling academic performance. Students who have high metacognitive awareness can be expected to proceed academically in a planned and organized way. The ability to guide one's learning, assess one's performance, comprehend what led to one's achievements or mistakes, and learn new techniques are all advantages associated with metacognitive awareness.

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