ISSN–2278-5655

AMIERJ Aarhat Multidisciplinary International Education Research Journal

Volume–XV, Issue– I Jan – Feb, 2026

OPEN ACCESS Original Research Article

METACOGNITIVE AWARENESS OF STUDENTS WITH RESPECT TO THEIR ACADEMIC AWARENESS

* Shalion Anthony Fernandes

* Ph.D. Research Scholar, St. Xavier's Institute of Education (Autonomous)

Abstract:

Metacognition is an individual's knowledge of their own cognitive processes and their ability to control these processes by organizing, monitoring and modifying them as a function of learning. Students who succeed academically often rely on being able to think effectively and independently in order to take charge of their learning. These students have mastered fundamental but crucial skills such as keeping their workspace organized, completing tasks on schedule, making a plan for learning, monitoring their learning path, and recognizing when it might be useful to change course. Learning cognitive and metacognitive strategies offers students the tools to "drive their brains." Being metacognitive can be likened to being more conscious, reflective, and aware of one's progress along the learning path. The present study was undertaken to find out the relationship between metacognitive awareness and academic achievement of students of secondary school, Std. IX of State Board students. The sample of the study comprised of 91 students of secondary school, Std. IX of State Board students. Metacognitive Awareness Inventory (MAI) by Schraw & Dennison (1994) was used to measure the metacognitive awareness. The findings revealed a significant difference in academic achievement of students of secondary school, Std. IX of State Board students with high and low scores in metacognitive awareness.

Keywords: *Metacognition, Metacognitive awareness, Knowledge about Cognition, Regulation of Cognition, Academic achievement.*

Introduction:

Metacognition can simply be explained by "thinking about thinking". A more appropriate explanation is that metacognition is the awareness or understanding of one's acquired knowledge. This understanding can be expressed through actual use of this knowledge, or by the ability to verbally describe it. In other words, it is about being aware of your own thinking and what possibilities you see when solving problems, making decisions or interpret a text. It also means making intentional strategy-choices when facing problems, verifying the direction towards which you are heading and continuously supervising your course of action. It is about having an active, conscious and systematic attitude and being able to reflect upon your own learning.

Review of Literature:

Research consistently highlights metacognition as a key predictor of academic success. Studies by David Dunning and Justin Kruger show that students with low competence often overestimate their abilities, reflecting poor metacognitive awareness. Narang and Saini (2013) found that rural adolescents with higher metacognition performed better academically, with both knowledge and regulation of cognition contributing significantly to achievement.

Similarly, John Dunlosky McCabe (2011) reported that secondary students were largely unaware of effective learning strategies such as spacing and testing. However, targeted instruction improved their

ISSN–2278-5655

AMIERJ Aarhat Multidisciplinary International Education Research Journal

Volume–XV, Issue– I Jan – Feb, 2026

OPEN ACCESS Original Research Article

metacognitive judgments. Research by Jeffrey D. Karpicke, Andrew C. Butler, and Henry L. Roediger III (2009) showed that most college students relied on rereading instead of retrieval practice, leading to "illusions of competence."

and SAT scores. Additionally, William L.

Kelemen (2000) found metacognitive accuracy to be inconsistent across tasks. Overall, metacognition is crucial but complex and context-dependent.

Research Gap:

This study addresses a research gap by examining metacognitive skills and Mathematics achievement among secondary school students in Mumbai. While prior research shows a positive relationship between metacognition and academic performance, this context has not been specifically explored. The study investigates whether academic achievement in Mathematics is mediated by metacognitive awareness. By focusing on secondary students in Mumbai, it contributes to existing research on achievement goals, metacognition, and academic success, particularly in the domain of Mathematics.

Objectives of the Study:

1. To study gender differences in academic achievement among students of secondary school, Std. IX of State Board students.
2. To study gender differences in metacognitive awareness among students of secondary school, Std. IX of State Board students.
3. To study the academic achievement by students of secondary school, Std. IX of State Board students having high or low level of metacognitive awareness

Hypotheses:

1. There is no significant difference in academic achievement among students of secondary school, Std. IX of State Board students in relation to gender.
2. There is no significant difference in metacognitive awareness among secondary school students in

Coutinho (2007) found that mastery goals positively predicted academic success, with metacognition acting as a mediator. However, Sperling et al. (2004) reported no significant correlation between metacognitive awareness

relation to gender.

3. There is no significant difference in academic achievement among students of secondary school, Std. IX of State Board students having high or low level of Metacognitive awareness.

Sample of the study:

The present study was conducted using the descriptive survey method. The population consisted of Standard IX students from State Board schools in Malad (West). Since it was not feasible to study the entire population, random sampling was used. A total of 100 students, including both boys and girls, were selected. Out of these, 91 students completed and returned the inventory properly. Therefore, the final sample of the study comprised 91 students.

Tools:

1. Metacognitive Awareness Inventory (MAI) by Schraw & Dennison (1994)
2. Academic achievement of the students was taken from their previous class results.

The Metacognitive Awareness Inventory (MAI) consists of 52-items which measure an individual's knowledge of cognition and regulation of cognition (Schraw & Dennison, 1994). Within these two constructs, the MAI also examines individuals' monitoring, evaluation of learning, conditional knowledge, planning, declarative knowledge, information management strategies, and procedural knowledge.

The Knowledge about Cognition dimension covers the areas of declarative, procedural and conditional knowledge as described below:

i. **Declarative Knowledge** i.e. The factual knowledge the learner needs before being able to

ISSN–2278-5655

AMIERJ Aarhat Multidisciplinary International Education Research Journal

Volume–XV, Issue– I Jan – Feb, 2026

OPEN ACCESS Original Research Article

process or use critical thinking related to the topic; Knowing about, what, or that;

ii. Knowledge of one's skills, intellectual resources, and abilities as a learner and that students can obtain knowledge through presentations, demonstrations, discussions.

iii. **Procedural Knowledge i.e.** The application of knowledge for the purposes of completing a procedure or process; Knowledge about how to implement learning procedures (e.g. strategies); Requires students know the process as well as when to apply process in various situations and that students can obtain knowledge through discovery, cooperative learning, and problem solving

iv. **Conditional Knowledge i.e.** The determination under what circumstances specific processes or skills should transfer; Knowledge about when and why to use learning procedures; Application of declarative and procedural knowledge with certain conditions presented and students can obtain knowledge through simulation.

v. **The Regulation of Cognition** dimension examines the individuals planning, information management strategies, comprehension monitoring, d and evaluation as described below:

vi. **Planning i.e.** goal setting, and allocating resources prior to learning

vii. **Information Management Strategies i.e.** Skills and strategy sequences used to process information more efficiently (e.g., organizing, elaborating, summarizing, selective focusing)

viii. **Comprehension Monitoring i.e** assessment of one's learning or strategy use.

ix. **Debugging Strategies i.e.** strategies used to correct comprehension and performance errors.

x. **Evaluation i.e.** analysis of performance and strategy effectiveness after a learning episode.

Reliability:

The internal consistency for the instrument was found to be α =0 .95 (Schraw & Dennison, 1994).

Validity :

Schraw and Dennison (1994) found evidence for the MAI's structural validity through confirmatory factor analysis, in which a 2-factor solution explained 65% of the variance in one sample, and 58% of the variance in another.

Statistical Techniques Used:

The data obtained was subjected to statistical analysis and following statistical tools were used:

1. Descriptive analysis as mean, median and standard deviations were used wherever required.
2. Independent t test were used to find the differences.

Results and Discussion:

Table 1: Mean differential in the academic achievement of male and female students of secondary school, Std. IX of State Board.

Variable	Female (N=33)		Male (N=58)		t-value	Levelof Significance
	Mean	S.D.	Mean	S.D.		
Academic Achievement	72.1818	8.42413	65.0862	8.04872	3.975	.01

The results entered in table 1 clearly indicate significant difference (t=3.975) in academic achievement of students of secondary school, Std. IX of State Board male and female students. Further, higher mean scores of female (M=72.1818) indicates that academic achievement of girls was significantly higher than the male students (M= 65.0862)

ISSN–2278-5655

AMIERJ Aarhat Multidisciplinary International Education Research Journal

Volume–XV, Issue– I Jan – Feb, 2026

OPEN ACCESS Original Research Article

Table 2: Mean differentials in the knowledge about cognition, Regulation of cognition and total metacognitive awareness of students of secondary school, Std. IX of State Board male and female students.

Dimensions of Metacognitive awareness	Female (N=33)		Male (N=58)		t-value	Level of Significance
	Mean	S.D.	Mean	S.D.		
Knowledge about cognition	12.70	3.644	11.63	3.120	1.467	NS
Regulation of cognition	25.88	6.294	24.30	5.368	1.263	NS
Total of both dimensions = Metacognitive Awareness	36.79	9.276	36.33	9.554	.223	NS

From the results in table 2, it is clear that there was no significant difference in knowledge about Cognition, Regulation of Cognition and total Metacognitive awareness. The results show that there is no gender difference in the knowledge about Cognition, Regulation of Cognition and total Metacognitive awareness. Girls and Boys are equally aware of their own Metacognitive processes.

Table 3: Mean differentials in the academic achievement of students of secondary school, Std. IX of State Board students with high and low scores in total dimensions of metacognitive awareness.

Metacognitive awareness	High score (n=24)		Low score (n=24)		t-value	Level of Significance
	Mean	S.D.	Mean	S.D.		
Knowledge about cognition	15.720	.93630	7.7500	2.50651	14.860	.01
Regulation of cognition	31.56	1.8046	18.00	4.28344	14.546	.01
Total of both dimensions = Metacognitive Awareness	46.92	2.613	26.54	6.607	14.306	.01

The results entered in table 3 show that there was a significant difference in the academic achievement of students of secondary school, Std. IX of State Board students with high and low scores in knowledge of cognition, regulation of cognition and total metacognitive awareness. This indicates that students with high scores in total dimensions of metacognitive awareness i.e. Knowledge of Cognition, Regulation of Cognition and Total Metacognitive Awareness have scored high in academic achievement.

Conclusion:

The present study examined the relationship between academic achievement and metacognitive awareness among Standard IX State Board students. The findings indicated a significant positive relationship between students' academic performance and their level of metacognitive awareness. This suggests that students who are more aware of their thinking processes and who actively regulate their learning tend to perform better academically.

The study further revealed that there was no significant difference between male and female students in terms of metacognitive awareness. However, a significant difference was observed in academic achievement, with female students outperforming male students.

Students who effectively use metacognitive strategies—such as planning, organizing information,

ISSN–2278-5655

AMIERJ Aarhat Multidisciplinary International Education Research Journal

Volume–XV, Issue– I Jan – Feb, 2026

OPEN ACCESS Original Research Article

monitoring their understanding, debugging errors, and evaluating their progress—are generally more successful learners. The findings emphasize the importance of encouraging students to reflect on what they know and what they need to learn. Teachers play a crucial role in fostering these skills by incorporating strategies that promote self- questioning, discussion, and reflective thinking. Developing metacognitive skills can enhance

academic performance and support higher-order learning

Suggestions for Further Research:

1. The present study was confined to only Std IX of State Board school of Malad West. The study can be extended to other areas of Maharashtra having similar schooling environment.
2. The present study was restricted to 91 students of secondary section. The findings of the study need revalidation and hence larger sample can be taken up in future research endeavours.
3. The study of the same nature can be taken for other board school students also.
4. A similar study at different levels can be conducted to make findings more reliable and valid.
5. A module on enhancing metacognitive skills can be planned and developed which will serve the needs of Indian adolescents better.
6. More social and psychological variables like intelligence, learning styles, motivation can be taken up in the research designs which may possibly influence metacognitive skills among different population groups in secondary and higher education.

References

1. *Coutinho , Savia A. (2007). The relationship between goals, metacognition, and academic success. Educate, 7(1), 39-47. Northern Illinois University : United States of America*
2. *Das, J. P., Naglieri, J. A., and Kirby, J. R. (1994). Assessment of cognitive processes, the pass theory of intelligence. Boston, MA: Allyn and Bacon*
3. *Dunning, D., Johnson, K., Ehrlinger, J., and Kruger, J. (2003) Why people fail to recognize their own incompetence. Current Directions in Psychological Science 12, 3, 83-87.*
4. *Everson, H. T., and Tobias, S. (1998) The ability to estimate knowledge and performance in college: A metacognitive analysis. Instructional Science 26, 65-79*
5. *Flavell, J. H. (1985). Cognitive development (2nd ed.). Englewood Cliffs, NY: Prentice-Hall Inc.*
6. *Karpicke , JD., Butler, AC., & Roediger, HL. (2009). Metacognitive strategies in student learning: do students practise retrieval when they study on their own? Memory, 17(4):471-*
7. *9. doi: 10.1080/09658210802647009.*
8. *Kelemen WL, Frost PJ, Weaver CA. (2000). Individual differences in metacognition: evidence against a general metacognitive ability. Memory Cognition, 28(1):92-107.*
9. *Kruger, J., and Dunning, D. (1999) Unskilled and unaware of it: How differences in recognizing one's own incompetence lead to inflated self-assessments. Journal of Personality and Social Psychology 77, 6, 1121-1134.*
10. *McCabe J. (2011). Metacognitive awareness of learning strategies in students of secondary school, Std. IX of State Boards. Memory Cognition, 39(3), 462-76. doi: 10.3758/s13421-010-0035-2.*
11. *Metacognition: The gift that keeps giving (2014) retrieved from http://www.edutopia.org / blog/ metacognition-gift-that-keeps-giving-donna-wilson-marcus-conyers*
12. *Narang, D. & Saini, S. (2013). Metacognition and Academic Performance of Rural Adolescents. Retrieved from www.krepublishers.com/.../S-HCS-07-3-167-13-248.*

ISSN–2278-5655

AMIERJ Aarhat Multidisciplinary International Education Research Journal

Volume–XV, Issue– I Jan – Feb, 2026

OPEN ACCESS Original Research Article

13. *Schraw, G. & Dennison, R. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19, 460-475.*
14. *Sperling, R. A., Howard, B. C., Staley, R. & DuBois, N. (2004). Educational Research and Evaluation, 10(2), 117-139.*
15. *Swanson, H. L. (1992). The relationship between metacognition and problem solving in gifted children. Roeper Review, 15(1), 43-49.*
16. *Vadhan, V., & Stander, P. (1994). Metacognitive ability and test performance among college students. Journal of Psychology, 128, 307-309.*

Cite This Article:

Fernandes S. A. (2026). *Metacognitive Awareness of Students with respect to their Academic Awareness*. **In Aarhat Multidisciplinary International Education Research Journal**: Vol. XV (Number I, pp. 71–76)