

## Metacognitive Awareness of Pre-Service Teachers

\* *Geetha.K R and \*\*Parimala Fathima. M*

\* *Research Scholar-Regular mode, College of Education, Faculty of Education, Alagappa University, Karaikudi-630 003*

\*\* *Assistant Professor, College of Education, Faculty of Education, Alagappa University, Karaikudi 630 003*

\* *Corresponding email: narpavig.2010@gmail.com*

---

### Abstract

In this 21<sup>st</sup>-century competitive world, each individual strives for excellence and moves forward to achieve their goal. Teacher education is not only confined to training but aims to wholesome development of pre-service teachers. Recent days research in the field of education focuses on the significance of metacognition in teaching-learning. The present investigation has been conducted to study the metacognitive awareness of pre-service teachers based on their age, gender, locality, and type of institution. The objective of the study is to assess the level of metacognitive awareness of pre-service teachers and find any significant variation based on their age, gender, locality, and type of institution. A descriptive survey method was employed for this study. A random sampling technique was used and 150 pre-service teachers responded online metacognitive awareness questionnaire. The results revealed that the metacognitive awareness of pre-service teachers does not differ based on their age, gender, locality, and type of institution.

*Keywords: Cognition, Metacognitive awareness, Pre-service teachers, Self-regulation*

---

### Introduction

In the present scenario the notion of “metacognition” and “metacognitive awareness” involves considerable attention in the educational environment to enhance the teaching-learning process, actual performance, and potential. Metacognition is considered as thinking about one’s thinking process. Metacognition is widely classified into metacognitive knowledge, metacognitive regulation, and metacognitive experience (Flavell, 1979). The metacognitive skill of pupil teachers influences their written assignment task performance (Ali et al.,2020). Human metacognition involves discrimination, interpretation, and broadcasting of subtle cues indicating the rightness of ongoing thought and behaviour (Heyes et al., 2020). Academic achievement of B.Ed. students is significantly related to Metacognition (Kavitha & Uma, 2020). Metacognitive



ability assists the learner to observe, regulate, and control their thinking processes (Patterson,2011). Metacognition governs the formation of executive functions (Bryce et al.,2015; Spiess et al.,2016). Metacognition is positively correlated to self-regulation of learning (Efklides,2009). Students with high metacognitive awareness can learn more effectively than their classmates (Wang et al.,1990). Thinking-aloud strategies elicit metacognition among students (Siddiqui et al.,2020).

## **Review of Literature**

Luke et al., (2021), investigated the metacognitive awareness of preservice teachers through mixed reality simulation and roleplay among 14 preservice teachers. A mixed research method was employed in the study. Both qualitative and quantitative analyses were done. The results showed that preservice teachers' metacognitive awareness improved through mixed reality simulations and roleplay.

Ozçakmak et al., (2021) studied the influence of metacognitive awareness on academic success among 314 pre-service teachers. Research indicated that the level of metacognitive awareness of pre-service teachers doesn't differ based on gender and pre-service teachers can make predictions, plan, monitor, and evaluate their cognitive functions.

Amin &Adiansyah (2020), conducted a descriptive quantitative method among 142 preservice biology teachers from various institutions in Indonesia. Metacognitive Awareness Inventory was used for data collection. The results indicated that the metacognitive awareness of preservice teachers comes under very low based on the average score of planning, monitoring, evaluation, and revising.

Asy'ari & Ikhsan (2019), examined prospective teachers' metacognition and metacognition awareness through an inquiry learning model. A single-group experimental design was utilized for this study. The experiment was conducted among 90 students, with three groups and the sample was selected by saturated sampling technique. Metacognitive Awareness Inventory (MAI) and metacognition knowledge tests include 20 items used for data collection. Results revealed that the level of metacognitive knowledge and metacognition awareness increased among the three groups of prospective teachers through the inquiry learning model but the effectiveness showed variation among the three groups.



Erenler & Cetin (2019), investigated the pre-service teachers' metacognitive awareness and scientific writing skills through Argument-Driven Inquiry (ADI) among 50 pre-service science teachers. A single-group design was utilized for this study. Results showed that pre-service teachers' metacognitive awareness and scientific writing skills improved by Argument-Driven Inquiry (ADI).

Duman & Semerci (2019), examined the prospective teachers' metacognitive awareness through the Metacognitive-Based Instructional Practice. An experimental study was employed with 44 prospective teachers of Dept. of Turkish Language Education from State University. Metacognitive Awareness Scale developed by Duman. B was used for data collection. The results showed that prospective teachers' metacognitive awareness significantly improved through metacognition-based instructional practice.

### **Need and significance of the study**

Core metacognition emerges early in human development, allowing a subject to automatically assess and control their cognition (Goupil & Kouider, 2019). Metacognition acts as a valuable tool for learning new information in the best way, and it enables the individual to evaluate their critique knowledge levels and change their learning methods as needed even in the absence of exterior critique (Guggenmos et al.,2016). Based on the previous research studies cognitive processes are those which are unique to an individual. Every individual has innate talents and qualities. Cognitive processes such as attention, understanding language, learning, memory, thought process, perception, decision-making, reasoning, and problem-solving are crucial to achieving the goal and being potent among other individuals. Learning depends on the cognitive processes of the individual. Learning and cognitive processes are interrelated, without cognitive processes one can't learn successfully. In addition to cognitive processes, metacognitive awareness or metacognitive knowledge is pivotal for the effectiveness of teaching in terms of creating strategic planning, self-regulation, and reflective thinking among pre-service teachers. Keeping in this mind the researcher and research supervisor intended to research the metacognitive awareness of pre-service teachers.



## Objective and Hypotheses of the Study

The objective of the study is to find out whether there exists any significant variation in the metacognitive awareness of pre-service teachers based on their age, gender, locality, and type of institution. The study hypothesized that the metacognitive awareness of pre-service teachers does not differ based on their age, gender, locality, and type of institution.

## Methodology

A descriptive survey method has been employed for the present study. The sample of the present investigation included 150 pre-service teachers from two selected colleges namely Alagappa University College of Education, Karaikudi, Arumugam Pillai Seethai Ammal College of Education, thirupathur, located in Sivagangai district, Tamil Nadu, India. The Random Sampling Technique was utilized for this study. A Metacognitive Awareness Questionnaire was used for data collection. Metacognitive Awareness Questionnaire was constructed and validated by the researcher and research supervisor. Validity is ensured as expert validity and test-retest reliability is 0.72. Data collection has been carried out through online mode. Metacognitive Awareness Questionnaire has been posted on freeonlinesurveys.com and sent through WhatsApp group and e-mail. Arithmetic mean, Standard deviation, t-test, and F-test were used for data analysis.

## Data Analysis and Interpretation

Age group	Mean	Standard Deviation	Sample Size	'F' Test	Level of significance
Below25	84.91	11.46	126	0.724	Not Significant
25-30	77.3	9.2	6		
Above30	91	12.13	18		

Table 1: Metacognitive awareness of pre-service teachers based on their age

From above table 1, the calculated F value (0.724) is less than the table value at a 0.05 level of significance. Hence, it is inferred that the level of metacognitive awareness of pre-service teachers does not differ based on their age.



Variables		N	Mean	Standard Deviation	t-test	Level of significance
Gender	Male	7	78.09	9.61	0.225	Not Significant
	Female	143	75	9.39		

\*Significant at 5% level

Table 2: Metacognitive awareness of pre-service teachers based on their gender

From above table 2, the calculated t value (0.225) is less than the table value at a 0.05 level of significance. Hence, it is inferred that the level of metacognitive awareness of pre-service teachers does not differ based on their gender.

Variables		N	Mean	Standard Deviation	t-test	Level of significance
Locality	Rural	94	89.41	11	0.102	Not Significant
	Urban	56	83	9.9		

\*Significant at 5% level

Table 3: Metacognitive awareness of pre-service teachers based on their locality

From above table 3, the calculated t value (0.102) is less than the table value at a 0.05 level of significance. Hence, it is inferred that the level of metacognitive awareness of pre-service teachers does not differ based on their locality.

Variables		N	Mean	Standard Deviation	t-test	Level of significance
Type of Institution	Govt	66	85.44	9.2	0.102	Not Significant
	Private	84	83.69	9.9		

\*Significant at 5% level

Table 4: Metacognitive awareness of pre-service teachers based on their type of institution

From above table 4, the calculated t value (0.102) is less than the table value at a 0.05 level of significance. Hence, it is inferred that the level of metacognitive awareness of pre-service teachers does not differ based on their type of institution.

## Discussion

The present research study revealed that the metacognitive awareness of pre-service teachers does not differ based on their age, gender, locality, and type of institution. These results are substantiated by the previous study by (Kaur et al.,2018), According to them, the metacognition



of B.Ed students does not differ based on their gender. Few research studies indicated that the metacognition of the teachers is influenced by the nature of the school (Periasamy,2021). When comparing metacognitive awareness with teaching and teaching competency, male student teachers' mean scores are much higher than female teachers' mean scores. Metacognitive awareness has a very high positive correlation with teaching and teaching ability for both male and female student teachers (Sahoo et al.,2021). The study has a few delimitations that need to be acknowledged here; the present study sample is confined only to pre-service teachers of two B. Ed colleges are located in the Sivagangai district.

### **Educational Implications and Vision for Future Research**

The findings of the current research have few implications for understanding pre-service teachers' metacognitive awareness based on age, gender, locality, and type of institution in a significant manner. Metacognitive awareness needs to develop among pre-service teachers so that they can reflect on their teaching-learning and enable them to take charge of their learning through a strategic approach. Future research needs to focus on enrichment programs, and experimental studies to enhance metacognitive awareness among pre-service teachers at the teacher training college level.

### **Conclusion**

Metacognitive awareness of pre-service teachers overcoming learning difficulties and lapses in their understanding and practice extensively. Every individual needs to be very competent to attain the desired goal. Pre-service teachers need to develop self-confidence, self-efficacy, reflective thinking, and divergent thinking to maximize learning. The present research study highlighted that the age, gender, locality, and type of institution of pre-service teachers do not influence their metacognitive awareness and also provide an avenue for future research.

### **References**

1. Ali, M. S., Siddiqui, D. G., & Tatlah, D. I. (2020). Understanding the effect of the metacognitive skills on pupil teachers' task performance: a mixed methods inquiry. *Pakistan Journal of the Society, education, and language*, 2523-1227.



2. Amin, A. M., & Adiansyah, R. (2020, March). Identification of preservice biology teachers' metacognitive awareness and metacognitive skills. In *Journal of Physics: Conference Series* (Vol. 1511, No. 1, p. 012029). IOP Publishing. doi:10.1088/1742-6596/1511/1/012029
3. Bryce, D., Whitebread, D., & Szűcs, D. (2015). The relationships among executive functions, metacognitive skills, and educational achievement in 5 and 7-year-old children. *Metacognition and Learning*, 10, 181-198. <https://doi.org/10.1007/s11409-014-9120-4>
4. Asy'ari, M., & Ikhsan, M. (2019). The Effectiveness of Inquiry Learning Model in Improving Prospective Teachers' Metacognition Knowledge and Metacognition Awareness. *International Journal of Instruction*, 12(2), 455-470. <https://doi.org/10.29333/iji.2019.12229a>
5. Duman, B., & Semerci, Ç. (2019). The Effect of a Metacognition-Based Instructional Practice on the Metacognitive Awareness of the Prospective Teachers. *Universal Journal of Educational Research*, 7(3), 720-728. DOI: 10.13189/ujer.2019.070311
6. Efklides, A. (2009). The role of metacognitive experiences in the learning process. *Psicothema*, 76-82.
7. Erenler, S., & Cetin, P. S. (2019). Utilizing Argument-Driven-Inquiry to Develop Pre-Service Teachers' Metacognitive Awareness and Writing Skills. *International Journal of Research in Education and Science*, 5(2), 628-638.
8. Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American psychologist*, 34(10), 906.
9. Goupil, L., & Kouider, S. (2019). Developing a reflective mind: From core metacognition to explicit self-reflection. *Current Directions in Psychological Science*, 28(4), 403-408.
10. Guggenmos, M., Wilbertz, G., Hebart, M. N., & Sterzer, P. (2016). Mesolimbic confidence signals guide perceptual learning in the absence of external feedback. *Elife*, 5, e13388.
11. Heyes, C., Bang, D., Shea, N., Frith, C. D., & Fleming, S. M. (2020). Knowing ourselves together: The cultural origins of metacognition. *Trends in cognitive sciences*, 24(5), 349-362. <https://doi.org/10.1016/j.tics.2020.02.007>
12. Kavitha, K., & Uma, T. (2020). Metacognition and Academic Achievement of B.Ed. Students. *AKCE QUEST*, 146(521.57), 9. ISSN: 2454-4531
13. Kaur, G., Fazilka, D., & India, C. (2018). Metacognition of B. Ed. students concerning their attitude towards teaching. *IJRAR-International Journal of Research and Analytical Reviews (IJRAR)*, 5(1), 329-337.
14. Luke, S. E., Ford, D., Vaughn, M., & Fulchini-Scruggs, A. (2021). Using mixed reality simulation and roleplay to develop preservice teachers' metacognitive awareness. *Journal of Technology and Teacher Education*, 29(3), 389-413.



15. Özçakmak, H., Köroğlu, M., Korkmaz, C., & Bolat, Y. (2021). The Effect of Metacognitive Awareness on Academic Success. *African Educational Research Journal*, 9(2), 434-448. DOI: 10.30918/AERJ.92.21.020.
16. Patterson, J. (2011). Metacognitive skills. *Encyclopedia of clinical neuropsychology*, 28(1), 1583-1584.
17. Periasamy, R.(2021). Metacognition among the School Teachers. *Group*, 294(2), 147-101.
18. Sahoo, S., Behera, M. P., & Sahu, S. (2021). Metacognitive Awareness on Teaching and Teaching Competence of Secondary Prospective Teachers.
19. Siddiqui, G. K., Lodhi, H., & Kalsoom, T. (2020). Intervening Role of Metacognition to Improve Task performance in Prospective Teachers: An Experimental Study. *Journal of Arts & Social Sciences*, 7(2), 52-59.
20. Spiess, M. A., Meier, B., & Roebbers, C. M. (2016). Development and longitudinal relationships between children's executive functions, prospective memory, and metacognition. *Cognitive development*, 38, 99-113. <https://doi.org/10.1016/j.cogdev.2016.02.003>
21. Wang, M. C., Haertel, G. D., & Walberg, H. J. (1990). What influences learning? A content analysis of review literature. *The Journal of Educational Research*, 84(1), 30-43.

