



## Metacognitive Skills Training: Exploring the Role in Pupil Teachers' Academic Performance

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**Abstract:** *The current study was conducted to explore the role of Metacognitive skills in prospective teachers' academic performance. Qualitative research was conducted. The Interpretivist paradigm has been followed for this study. This study was a follow-up of a quantitative experiment. The sample of four male and four female prospective teachers enrolled in the B.Ed Honors in a public university has been selected with the help of a purposive sampling technique. A semi-structured interview protocol consisting of 10 items was used for the data collection. The data was analyzed with the help of Thematic analysis. According to the research participants' views, they not only learnt Metacognitive skills but also used them during their studies and task performance. They found these skills helpful in conducting the tasks successfully and effectively. So, it is recommended that teacher educators should use Metacognitive development strategies to develop these skills in prospective teachers.*

**Key Words:** Metacognition, Metacognitive Skills, Pupil Teachers, Academic Performance

### Introduction

The students' Metacognition and Metacognitive skills have been the topic of interest for researchers since 1979. The reason behind this is, that these skills are not important for the studies alone. Rather these are life skills and bear great importance regarding the conduction of a variety of activities. Regardless of the nature of any activity (either academic or non-academic), each activity is done by the individual while utilizing the acquired knowledge (Siddiqui, 2016). The utilization of the acquired knowledge for the conduction of concerning activity demands decision-making followed by the problem-solving approach (Rahman, 2011). However, decision-making and problem-solving are done as a result of Metacognition. One's decision-making and problem-solving depend upon the extent to

which one utilizes one's Metacognitive skills (Ali, Siddiqui, & Tatlah, 2020).

The root of the word "Cognition" has come from a Latin word that is "cognoscere". It means "to know". As per its definition, it is a process involving one in thinking and understanding followed by acquiring knowledge while using one's senses (Cognifit, 2019). During Cognition, the individual receives the information, transforms it, codes and stores it followed by its retrieval (Eskandari, Amini, Delavari, Mokhtarpour, & Jaafari, 2020).

There is a difference between Cognition and Metacognition it can be easily seen that what one knows is concerned with one's Cognition whereas how one intends to use "what one knows" is concerned with Metacognition. In simple, Metacognition is a process by which one is engaged in thinking

over own thinking and learning as well (Amzil & Stine-Morrow, 2013).

As far as it is concerned with the history and recognition of Metacognition, although this concept has been formally brought into the light by John H Flavell in the 1970s, however, this has been discussed by Plato in his dialogue "Meno". Plato seeks to discover someone inside oneself who could endeavour to make oneself better as a result of self-evaluation which is dependent on thinking overthinking in itself (Worley, 2018; Plato, 385 BCE). Similarly, thinking has been described by Plato as a dialogue initiated by the soul with itself. The term "Silent Dialogue" has been used by Socrates which describes that one's soul plays a plural role whereby one gets self-consciousness during solitude. One encounters the duality which provides one with the chance of becoming the questioner and answering the questions oneself (Akturk & Sahin, 2011; Carlill, 1906; Plato, 1921). Aristotle on the other hand stated in terms of activity that one gets to engage in seeing own thinking above and beyond. Seeing one thinking above and beyond is a form of thinking over own thinking (Georghiadis, 2012; Juma, 2017).

The purpose of the above-mentioned literature wasn't to deprive John H. Flavell (1970) of being the father of Metacognitive Psychology. Not at all. Rather it was to put that Metacognition has been under discussion since the age of Plato and Aristotle as well. However, there is no doubt that the term "Metacognition" has been introduced by John H. Flavell in the 1970s and "Metamemory" has been used by Flavell before naming this concept "Metacognition".

Metacognition has been stated by Flavell (1979) as one's awareness. This awareness enables one to think over own thinking and learning as well. In simple, it is individuals' cognition over cognition. It has been divided into two factors including knowledge and control over cognition. The knowledge is further divided into 3 indicators. One of them is Declarative whereas the second of them is Procedural and the third is Conditional knowledge (Zimmerman, 2010). The

Declarative type of knowledge consists of the thinking generally, capabilities of processing and learning strategies whereas the Procedural knowledge is concerned with the usage of strategies and processes regarding learning optimization. Whereas the Conditional type of knowledge is concerned with using the strategies in terms of when and how to use them (Azevedo & Winne, 2014; Vallin, 2019). Cognition regulation possesses five indicators including Planning; Information Management; Monitoring; Debugging and Evaluation (Amzil & Stine-Morrow, 2013).

In the whole world, different research has been done related to Metacognition and Metacognitive skills including the research conducted by Adnan & Bahri (2018) who developed Metacognitive skills while using the guided theory. Similarly, Azizah & Nasrudin (2018) developed the aforementioned skills with the help of self-developed instructional material. Erdogan & engül (2017) also developed these skills while teaching the students by utilizing the Cooperative learning strategy enhanced with the Metacognitive strategies. Eskandari et al (2020) also investigated the effect of Metacognitive skills on the student's motivation along with their achievement. However, there is a lack of related research in Pakistan. Therefore, the current research has been conducted to fill in the gap and address the grey area.

### Methodology

The current study was conducted to explore the role of Metacognitive skills in prospective teachers' academic performance. Qualitative research was conducted The Interpretivist paradigm has been followed for this study. This study was a follow-up of a quantitative experiment in which the prospective teachers (experimental group) were given the intervention to develop Metacognitive skills. The sample of four male and four female prospective teachers enrolled in the B.Ed Honors in a public university has been selected with the help of a purposive sampling technique. A semi-structured interview protocol consisting of 10 items was used for the

data collection. The data was analyzed with the help of Thematic analysis.

## Results

The whole process of the secondary data collection as well as the analysis has been done to answer the abovementioned research question. The attained themes from data are *Overall impression about the training; Key learnings/developed skills; Planning-a skill to achieve better results/outcomes; Information management-step towards improved understanding; Monitoring and evaluation-a strategy to assess ourselves/task/performance; Improved oral presentation skills; Preparation for exams; Difference after attending training; Practical implications of learned skills; Role of teacher/instructor and Satisfaction with training; Suggestions*. The detail is as under:

### Overall Impression about the Training

The participants shared encouraging remarks about the experience (Metacognitive skills development training) they had during their first semester. When it was asked about their point of view regarding the training, the groups' immediate response was:

*"It was a good experience after learning about planning, monitoring and evaluation of the planned task/activity, we are apprehensive about its application in the classroom".*

One of the participants started to express his views:

*"If as a student I describe my viewpoint about the training, I really appreciate the teacher who introduced this to us because seems to me it is a new thing which has developed my interest towards it".*

Another participant added to this:

Though the training was sequential in nature and was delivered step by step it is not like routine training because in this training we were learning and practising side by side which helps pave the path towards improved learning.

Most of the participants highly appreciated the training which triggered their interest towards achieving the particular goal by

making themselves skilled enough to utilize higher-order thinking skills for better learning. One of the participants shared her feelings:

As we were engaged as participants in this training during our first semester of B.Ed. (Hons), this is the first time in my academic career I attended any training.... I am feeling good about this exposure. The training turned out to be a milestone in my academic and professional life.

After the introductory question, the interview conversation shifted to real concern to explore the views of participants.

### Key Learnings/ Developed Skills

The participants of the interview explicitly shared their learnings which they have developed during metacognitive skills development training. They highlighted certain developed skills/learnings; planning the task, information management, monitoring of task, debugging and evaluation during any task performance. One of the participants opened up as:

*"I have learned new things during this training (Metacognitive skills development), if, one day, we are involved in activities to plan the task.... then the other day, we are learning how to evaluate the task".*

The following is the detail of key learnings:

### Planning-a Skill to Achieve Better Results/Outcomes

The participants shared their learnings which helped them to reflect upon their learning while developing planning skills to execute the task effectively. All of them agreed that planning helped them in managing academics and other (domestic/routine) activities. A participant shared his views:

*"In this training, the most important skill which I have developed is 'planning Planning is a crucial step in any process or execution of any task. Certainly, if we are well planned, we will be more systematic and scheduled in our learning"*

All the participants agreed on the point that they have learnt to be plan and hope to get

benefits from this in future. One participant shared:

If we (participants) plan our activities effectively only then we can prepare presentations effectively and deliver actively in front of the whole class. This training gave me knowing how to adapt/adopt plans according to the situations and needs and how to avoid wasting time with the help of planning.

The response of the group was positive towards planning and agreed that they learnt the importance of planning and learnt a lot about it to implement in real life to achieve better outcomes while reducing mistakes and delays. One of the participants commented:

*"Although, we were familiar with the term 'planning already in our life this training has highlighted the importance of it by providing us with an opportunity to practice this skill"*

### **Information Management-step towards Improved Understanding**

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Participants were appreciative of the fact that skills were instrumental to promote deeper understanding regarding any topic. It was revealed during the conversation/interview that training has improved their understanding because when they want things/activities planned for better execution, it needs proper understanding. For this purpose, they search for information. One of the participants spoke as:

*"I am more composed in my ideas because I plan things first, then look for plenty of related information to achieve the desired outcome and evaluate the task/activity to see whether planning works out well or not!"*

Participants were convinced that training introduced many new things to them and improved their knowledge. One of the participants was of the view that:

Training has made me creative and curious about learning new things because training has developed the sense that students who are with strategic plans are more successful and active in the classroom than the ones who are not keen to reflect upon their learning process.

Most of the participants highlighted that Metacognitive skills development training help helps them to retain the information in their minds for last long because when they develop their own ways to learn different things, it robustly links to better memory skills. One of the participants narrated:

*"Whenever I have to perform a task, possession of information is essential regarding the task, I search out different material from the internet to get my concepts clearer before the execution/submission".*

### **Monitoring and Evaluation-a Strategy to Assess Ourselves/ Task/ Performance**

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The participants were convinced that certainly, training contributed a lot in developing a positive attitude towards not only monitoring the task assigned by the teachers but to evaluate themselves to make improvements in the learning. One of the participants said:

I internalized the idea and purpose of Metacognitive skills development training and started to take it as an opportunity for my learning growth as a student by reflecting upon myself/ evaluating myself to find out my weak areas and polished my strengths. After a short period, I strongly felt that I was fortunate enough to become a part of this training.

Simultaneously, another participant was of the opinion that:

*"Besides planning tasks and gathering information to perform the task we use different techniques to track our learning progress by monitoring our performance and evaluating ourselves".*

One of the participants added to this as it is very difficult to evaluate ourselves but I can say that;

It is not difficult for me to evaluate myself and identify the areas of my learning that have improved over the period of the first semester. Yet, Metacognitive skills development training incredibly helped me to pave the path for my improved learning and enhanced confidence. It was due to engagement in training and

activities we underwent as a reflection of our learned skills. I critically observe myself/performance if unable to achieve desired results in a planned time.

It was evident from the participants' responses that they are more planned, systematic and critical towards their learning and keen to develop their own strategies to evaluate their tasks/performance.

### Improved Written Assignment and Oral Presentation Skills

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Most of the participants involved in the Focus group interview were positive about the fact that Metacognitive skills development training has improved their "written assignment and oral presentation skills and enhanced their confidence to explain their point of view in front of the class. One of the participants shared:

While preparing my assignment and presentations, I was hesitant to present and deliver but now I plan, gather information, monitor my own performance and evaluate the results of my task, last but not least has developed the confidence to express my ideas freely. My first assignment was not so much organized and the presentation was a kind of speech, the ideas were scattered and I could not reflect upon my performance as a confident student but now I plan things for myself and try to identify my strengths and areas to improve upon after evaluation. It grew successively as a student due to proper planning, because of which I have become a responsible learner.

Another participant added to this:

*"Now, it is always easy for me to prepare the assignment on time, gather information and present on dice because when we are planned and have command over the content then ultimately it boosted confidence and improves oral presentation skills".*

A participant acknowledged:

*"Despite getting a good hold upon content and skills, I lacked oral presentation skills. Due to these training sessions, I am confident that now I*

*will be able to speak confidently while presenting."*

A participant excitedly uttered: *"I have gained confidence and developed a positive attitude towards preparing the assignment and presenting while discussing in my classroom and intend to share my knowledge and skills with other teachers and students".*

### Preparation for Exams

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It was noticed during the interview that participants were always worried about grades and marks when they have to manage assignments, presentations, midterm exams and final exams in a scheduled time of 4 months of the semester. One of the participants excitedly shared that:

It always has been difficult for me to manage the different tasks at a time effectively.... If I have to submit two assignments on the same day.... It makes me depressed and confused. Ultimately, spent more time on assignments and presentations by concentrating less on actual learning for mid-term and final exams but engagement in this training has introduced ways to manage activities and learnings because if I am well in managing my learning activities then will be plan accordingly to prepare myself for exams without having any stress.

Another participant added to this:

*"We (students), who have semester system in their universities always lack in planning and managing all the assignments and presentations effectively and put the exams preparation at the end.... but this (impact of Metacognitive skills development training) is the time to take initiative towards developing our strategies to learn and prepare for exams".*

Conversation with participants unveiled that they are more planned to prepare themselves for examination because planning leads to self-organization and it is the way to be successful in class as a student and then as a teacher.

## The difference after Attending Training

It was evident from participants' responses that they are highly appreciative of Metacognitive skills development training which provided them with the opportunity to learn/develop skills at their study place without paying additional time. A participant voiced as:

Honestly speaking, I wasn't even familiar with the term 'Metacognition.... I was confused at the start because I was always like a passive learner in the classroom before this exposure (Metacognitive skills development training) .... but things are changing gradually because it has changed my perception. Now, I can not only explain Metacognitive skills but can find them useful in my life (academic and professional).

Another participant continued:

*The training (Metacognitive skills development) not just has developed me for effective learning but also has introduced many things through which a student can take start to think over his/her learning. I wasn't used to planning anything.... All the activities in my life were executed haphazardly but it has been realized that we must have to evaluate ourselves to see what we have learnt and impacted our personality".*

Generally, participants appreciated the training and found an enormous difference in themselves before and after attending the training. One of the participants differentiated herself and shared:

This training has supported us in overcoming our misconceptions about various concepts as students; e.g., we always thought that we have been using these terms, i.e., planning, monitoring and evaluation but without understanding. Now we fully understand what planning is, how it contributes to our growth as a student, what monitoring is and what evaluation is and when and how to conduct it.

One of the participants said:

At the start of my semester, I lacked in properly manage my learning and other routine activities which always lowered my grades and

delayed the submission of assignments but now I am enough aware of managing to learn and preparing the assignments timely. Though, not sequentially but I am trying to monitor and evaluate my activities/tasks. For this, my efforts were to change my learning style and adopt the style as per my attitude.

## Practical Implications of Learned Skills

Commenting upon the practical implications of metacognitive skills development training in academic and professional life as well as daily routine chores, surprisingly, the group expressed their views on practically implementing the training.

One of the participants elaborated with an example:

We are enrolled in a teacher-education degree with the aim to be effective teachers and teaching is at the core heart of planning. If we want to achieve the learning outcomes of the specific topic then teachers must come up with proper planning because if the teacher is not a good planner, he/she neither delivers the content effectively nor engages students actively in the learning process.... Planning will help to manage the class/students efficiently and robustly and will help achieve desired outcomes.

Most of the participants were of the view that training has/will have a significant impact because the training is inclined towards practice more than content learning. One of the participants added;

*"The activities introduced in the training sessions are appropriate and adaptable. However, keeping in view our actual learning situations and challenging conditions, we must have to promote/train the Metacognitive skills of students".*

## Role of teacher/instructor

The participants appreciated the teachers encouraging behaviour and efforts for developing Metacognitive skills to improve students' performance and gauging learning among students. One of the participants highly praised his teacher/instructor as:

*"I highly admire our teacher who performed his duty as an instructor, guide, facilitator and trainer by creating an environment in the class conducive to inculcating metacognitive skills".*

One of the participants from the group commented as: *"Our teacher provided us opportunities to learn new things and reflect upon them"*.

The responses of the participants also revealed that teachers must have to reflect/practice the skills he/ she try to develop in students and have a natural ability to educate the learners and imbibe to absorb the knowledge.

One of the participants views were as:

It is essential for a teacher/ instructor to be a good manager and planner to transfer the same to his/her students because if the teacher lacks in practicality then robustly students will follow the same. Our teacher did not only deliver the training which is theoretically based but also practice the skills.

### Satisfaction with Training

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Most of the participants of the interview were quite satisfied with the training and the skills they learnt from the training. Almost all the participants unanimously agreed to the fact that the traditional way of delivering the training ends up in the memorization of facts and ideas (written in students' notebooks) without conceptual understanding. They appreciated the opportunity of sharing ideas that were provided during class hours. One of the participants shared:

Training is very well structured. The worksheets which were filled out ourselves were appropriate to meet our needs as students to develop metacognitive skills. But one thing that I have learned through this training is effective planning. The challenge is how we can use this in our actual environment where we have to meet certain exam patterns. So, this is a challenge for us how we will be able to make it relevant in actual environmental conditions.

Participants of the interview recommended the training for the next semesters to polish

their skills and improve learning while training Metacognitive skills.

### Suggestions

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The training was delivered to the participant with high spirits but they talked about the aspects which need to be focused on and suggestions were put forward by participants to make some improvements in further training sessions. The following are suggestions:

1. There should be a continuation in the training and it should be extended to other courses to provide the students with the opportunity to train their Metacognitive skills consistently.
2. There should be a mechanism for teachers' training because teachers sometimes come to class without planning and delivering the content as a burden to accomplish the task which robustly impacts our learning.

### Conclusion

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Based on the results, it is concluded that the participants gave their views that they not only learnt Metacognitive skills but also used them during their studies and task performance. They found these skills helpful in conducting the tasks successfully and effectively.

### Discussion

The results of this study have been supported by ALshammari (2015) who conducted a similar study. However, only academic achievement has been focused on by the aforementioned whereas academic achievement is one of the dependent variables that has been studied in the current research study. The aforementioned findings also supported the results by Rizk, Attia, & Al-Jundi (2017) who also experimented. Their findings were similar to the current study that Metacognitive skills affected the mathematics results positively. The findings of the current study also supported Amzil & Stine-Morrow (2013) who concluded that academic performance is positively affected by Metacognitive skills. Azizah & Nasrudin (2018) also concluded similarly to the current study

that the prospective teachers with higher Metacognitive skills performed better in academics as compared to those with low Metacognitive skills.

### **Recommendations**

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Based on the results, it is recommended that teacher educators should use Metacognitive development strategies to develop these skills in prospective teachers.

## References

- Annan, & Bahri, A. (2018). Beyond effective teaching: Enhancing students metacognitive skill through guided inquiry. *Journal of Physics: Conference Series*, 954, 012022. <https://doi.org/10.1088/1742-6596/954/1/012022>
- Akturk, A. O., & Sahin, I. (2011). Literature Review on Metacognition and its Measurement. *Procedia - Social and Behavioral Sciences*, 15, 3731–3736. <https://doi.org/10.1016/j.sbspro.2011.04.364>
- 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 Society, Education and Language (PJSEL)*, 7(1), 46–51. <https://pjsel.jehanf.com/index.php/journal/article/view/304>
- Alshammari, D. M. (2015). The effect of using metacognitive strategies for achievement and the trend toward social studies for intermediate school students in Saudi Arabia, 47-54.
- Amzil, A., & Stine-Morrow, E. A. (2013). Metacognition: Components and relation to academic achievement in college. 371-385.
- Azevedo, R., & Hadwin, A. F. (2005b). Scaffolding Self-regulated Learning and Metacognition – Implications for the Design of Computer-based Scaffolds. *Instructional Science*, 33(5–6), 367-379. <https://doi.org/10.1007/s11251-005-1272-9>
- Azizah, U., & Nasrudin, H. (2018). Empowerment of Metacognitive Skills through Development of Instructional Materials on the Topic of Hydrolysis and Buffer Solutions. *Journal of Physics: Conference Series*, 953, 012199. <https://doi.org/10.1088/1742-6596/953/1/012199>
- Cognifit. (2019, March 3). Cognition and Cognitive Science. Cognifit: <https://www.cognifit.com/cognition>
- Eskandari, M., Amini, M., Delavari, S., Mokhtarpour, S., & Jaafari, M. (2020). The effect of metacognitive skills and academic motivation on academic performance. Research Square, 1-10. doi: <https://doi.org/10.21203/rs.2.2099/v1>
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. *American Psychologist*, 34(10), 906–911. <https://doi.org/10.1037/0003-066x.34.10.906>
- Georghiades, P. (2012). From the general to the situated: three decades of metacognition. *International Journal of Science Education*, 26(3), 365-383. <https://doi.org/10.1080/0950069032000119401>
- Rahman, F. (2011). Assessment of science teachers metacognitive awareness and its impact on the performance of students. Lahore: (Unpublished Doctoral Thesis) Allamah Iqbal Open University Lahore.
- Rizk, N. M., Attia, K. A., & Al-Jundi, A. A. (2017). The Impact of Metacognition Strategies in Teaching Mathematics among Innovative Thinking Students in Primary School, Rafha, KSA. *International Journal of English Linguistics*, 7(3), 103-114. doi:10.5539/ijel.v7n3p103
- Siddiqui, G. K. (2016). Development of metacognitive skills in prospective teachers and its relation to their task performance. (Unpublished Doctoral Thesis) Institute of Education and Research, University of Punjab, Lahore.
- Tatlah, M. S. (2020). UNDERSTANDING THE EFFECT OF THE METACOGNITIVE SKILLS ON PUPIL TEACHERS TASK PERFORMANCE: A MIXED METHODS INQUIRY. PAKISTAN JOURNAL OF SOCIETY, EDUCATION AND LANGUAGE, 46-51.
- Vallin, L. M. (2019). A pedagogical approach to improving students' use of metacognitive strategies. Manoa: Unpublished Doctoral Thesis (University of Hawaii'i. <https://scholarspace.manoa.hawaii.edu/>

[bitstream/10125/63179/1/Vallin\\_hawii\\_0085A\\_10141.pdf](https://doi.org/10.21913/jps.v5i1.1486)

Worley, P. (2018). Plato, metacognition and philosophy in schools. *Journal of Philosophy in Schools*, 5(1).

<https://doi.org/10.21913/jps.v5i1.1486>

Zimmerman, B. J. (2010). Self-regulation involves more than metacognition: A social cognitive perspective. *Educational Psychologist*, 217-221.