

# The Role of Metacognitive Strategies in Alleviating Academic Stress Among Secondary School Students in Virtual Learning Environments

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## ABSTRACT

The present study explores the role of metacognitive strategies in alleviating academic stress among secondary school students in virtual learning environments. Metacognitive strategies involve students' awareness and regulation of their learning processes. In a classroom environment, metacognitive strategies have been shown to enhance academic performance and reduce stress by promoting self-regulated learning and effective problem-solving skills. In the post-pandemic world, due to the shift to virtual learning, unique challenges such as increased screen time, and difficulty in maintaining focus and motivation have been observed. The metacognitive strategies may facilitate the students to introspect and reflect. The research findings reveal that students who actively employ metacognitive strategies experience significantly lower levels of academic stress and demonstrate better adaptability to virtual learning environments. Teachers also reported observing improvements in students' engagement and performance when metacognitive strategies were integrated into the curriculum. The necessity of incorporating metacognitive training in educational practices, especially in virtual settings, to foster a more supportive and effective learning environment needs to be met. These insights are crucial for educators and policymakers aiming to enhance the quality of virtual education and address the growing concerns of academic stress among students. By understanding and leveraging the benefits of metacognitive strategies, educational stakeholders can develop targeted interventions to support students' well-being and academic success in an increasingly digital world.

**Keywords:** Metacognition, Metacognitive strategies, Virtual learning, Academic stress, Introspect, Reflection

Stress is detrimental to an individual's physical and mental well-being and adversely affects one's academic performance and cognitive development. Stress is now understood as a lifestyle crisis (Masih & Gulrez, 2006) affecting individuals regardless of their developmental stage (Banerjee & Chatterjee, 2016). In the year 2019, when the world was hit by a worldwide health emergency (COVID-19); a surge in the cases of stress and associated factors was observed globally. It compelled people into isolation, introducing a new normal of working from home and online schooling for children. It had a profound impact on the students making

them more susceptible to worry, stress, depression, and anxiety.

During times of crisis, the emotional and learning needs of students become more vulnerable, particularly for secondary school students who are undergoing significant physiological and psychological changes. At this critical stage, students require support, guidance, and personalized

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attention from teachers to lay the groundwork for their future education and endeavors.

The transition to online learning presented significant challenges for secondary school students, resulting in missed learning opportunities and a diminishing sense of healthy competition. This abrupt shift upset the balance between academic performance and personal well-being, leading to a decline in educational outcomes.

The sudden shift to online instruction left students susceptible to prolonged work hours, reduced authenticity, and increased screen time, ultimately contributing to heightened academic stress. Consequently, it became crucial to comprehend the origins and impacts of academic stress to develop effective intervention strategies.

Intervention strategies such as metacognition, which empowers students to reflect on and regulate their own learning and personal needs, have become imperative. Defined as 'cognition about cognition' or 'knowing about knowing,' metacognition takes various forms and incorporates knowledge about when and how to apply specific learning and problem-solving strategies. Therefore, this study seeks to explore the role of metacognition in alleviating academic stress resulting from online learning among secondary school students.

### **Metacognition**

Understanding metacognition is like having a backstage pass to one's mind. It involves being fully in tune with one's cognitive processes, and knowing how an individual thinks, learns, and solves problems. This heightened self-awareness is crucial for identifying and learning from one's mistakes, ultimately leading to personal growth and self-discovery. Embracing metacognitive awareness can supercharge one's productivity and streamline efficiency.

### **Metacognitive strategies**

Metacognitive strategies involve the thoughtful processes that enable individuals to gain a better understanding of their surroundings. These strategies shed light on how individuals function cognitively. The key aspect of metacognitive strategies lies in being conscious of one's cognitive processes. This means being aware of the thinking

process and the various factors that influence it. For instance, realizing that studying in a peaceful environment yields better results compared to a noisy, chaotic setting exemplifies this awareness. In such instances, one may notice a reduced ability to concentrate due to numerous distractions. Some of the strategies that were employed were:

- Introspection and Self-awareness
- Self-reflection
- Self-correction
- The setting of goals

### **Review of Related Literature**

The literature review showed that metacognitive awareness and educational stress play a significant role in procrastination in academics. Academic procrastination was inversely connected with metacognitive awareness but favorably correlated with educational stress. Metacognitive awareness and educational stress accounted for 20% of overall academic procrastination variation (Çikrikci ,2016). The need to include metacognitive calibration as one of the learner characteristics of research models that address student performance in online learning has been reported (Zhao *et al.* 2020). Academically resilient students sustain excellent academic achievement despite stressful and challenging circumstances that put them in danger of receiving poor grades. It was concluded that academic resilience increases students' academic progress (Radhamani *et al.* 2021). Changes in emotional feelings to be more positive, reduced task load, and reduced stress levels with methods and learning schemes that follow the principle of self-introspection have been found. Self-introspection has a positive impact on Teaching Students with Virtual Learning during the COVID-19 Pandemic (Prakoso, 2021). Improving self-study, metacognitive awareness, and skills and abilities in the 21<sup>st</sup> century can enhance readiness for online learning. Self-directed learning ability, metacognitive awareness, and 21<sup>st</sup>-century skills and abilities positively predict future teachers' readiness for online learning (Karatas *et al.* 2021). The impact of uncontrollable stress on academic performance is a significant concern, often leading to students dropping out of school. According to Pompilus *et al.* (2021), stress-related lack of motivation is a key factor contributing to

the increasing number of students leaving classes and schools. Moreover, mental effort and difficulty appraisals are susceptible to misleading cues, similar to other metacognitive judgments, and are based on unique underlying processes. Hoch *et al.* (2023) further suggest that mental effort appraisals can serve as reliable reflections of cognitive load. Research conducted by Urban *et al.* (2024) revealed that unskilled and unaware students often struggle with deficits in strategy knowledge and exhibit poor metacognitive skills. On the other hand, unskilled but aware students demonstrate low self-efficacy and motivation to perform. This suggests the importance of addressing these challenges within educational settings.

The above findings strongly indicate that metacognitive strategies can be employed as an intervention to enhance the efficacy and efficiency of students at various levels. Furthermore, engaging in self-reflective activities can help students maintain focus, deepen their learning, and remain motivated. Additionally, self-introspection serves as an effective strategy to aid students in their learning process and enables educators to identify student deficiencies, thereby minimizing learning errors.

It is worth noting that utilizing metacognition to alleviate academic stress warrants further exploration, particularly in its potential to impact student well-being and academic outcomes. This area of study presents an opportunity to develop innovative approaches to support students in overcoming academic stressors.

## Research Questions

The review of related literature supported the investigator to frame the following research questions for this study:

- (i) How are the individual differences of the students taken care of in an online learning system?
- (ii) Why is it important for a student to adopt a coping strategy to deal with academic stress in an online learning environment?
- (iii) What kind of coping strategies are adopted by adolescents to reduce academic stress?
- (iv) How does awareness of student strengths and weaknesses help in overcoming academic stress?

- (vi) How does Self-regulation support the students to introspect and retrospect?
- (vii) What is the role of metacognition in helping secondary school students in reducing their academic stress?

## Delimitation of the Study

The study had the following delimitation:

- (i) The study was delimited to the schools of Delhi NCR due to the COVID-19 Pandemic because of this it became difficult to expand the area of investigation.
- (ii) The study was delimited to the secondary school level because according to the Theory of Cognitive Development given by Piaget (1936), an individual becomes capable of deductive and hypothetical reasoning in the Formal Operational Stage (age 12-adulthood). He/she develops the ability to think about abstract concepts and reason about their thought processes and monitor them. Due to this, the students of the Secondary School Level were selected for this study.

## Research Objectives

The following Research Objectives were framed by the investigator based on the Research Questions:

- ❑ To explore the secondary school students' awareness regarding their strengths and weaknesses as online learners.
- ❑ To explore the role of metacognition in supporting secondary school students in their adjustment to online learning.

## Research Design

To explore the research objectives framed for this study, a descriptive research design method was used to investigate the role of metacognition in curbing academic stress among secondary school students. The target population of the study was students from the secondary school level.

## Sample

The study was done at the secondary school level. 6 schools were selected for the collection of data. The total sample size is 40 secondary school students. The sample for this study was selected

from different secondary schools across Delhi NCR region. Random Sampling was done to scrutinize the stated problem. Three structured interviews and a mixed questionnaire were prepared by the researcher to collect data from secondary school students. This was validated by different research experts.

**Tools**

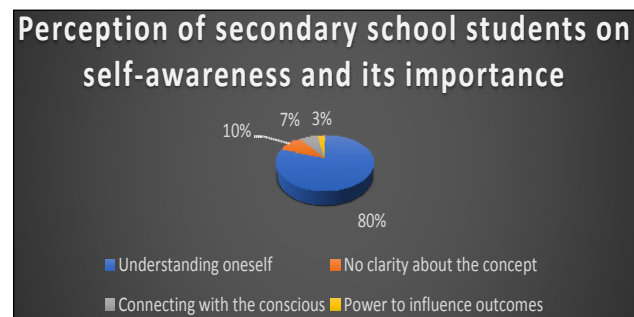
Qualitative tools were used to do the content analysis of the data. The data collected was analyzed and interpreted. Percentage analysis and frequency distribution were done by the researcher for the data collected.

The integral elements on which the structured interviews were planned and held are as follows:

- ❑ Student’s perception of self-awareness and its relevance according to them.
- ❑ Strengths and weaknesses of secondary school students during online classes.
- ❑ Role of introspection, retrospection, and self-evaluation in curbing academic stress due to online learning.

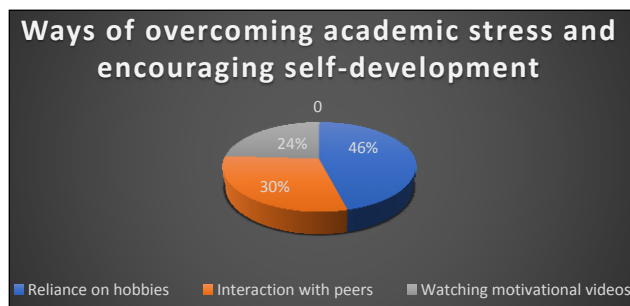
**RESULTS AND DISCUSSION**

**Objective 1** explores the awareness of secondary school students regarding their strengths and weaknesses as online learners during the COVID-19 Pandemic.



**Fig. 1:** Perception of Secondary school Students on self-awareness and its importance

From the data analyzed above, it was interpreted that the majority of students keep a regular and conscious check on their thoughts as it helps them become more organized and helps them understand their thoughts and realize their strengths and weaknesses.



**Fig. 2:** Ways of Overcoming academic-stress and Encouraging Self-development

It can be interpreted from the above analysis that students rely on various techniques to overcome academic stress. It is different for different individuals in how they deal with stress. The majority of the students relied on interaction and discussion with their peers and parents as a helpful strategy for dealing with stress. They felt that sharing and communicating their problems with others made them deal with stress in a better way.



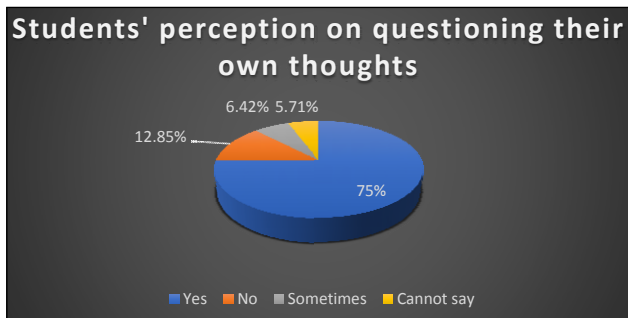
**Fig. 3:** Role of self-awareness in better decision-making

The above analysis shows that self-awareness and introspection can increase the level of understanding among secondary school students and can also initiate better decision-making skills. Self-awareness not only encourages better awareness of the self but also enhances the effective and efficient working of an individual, it can also help in realizing the strengths and weaknesses of an individual and also initiates self-realization. This can be seen from the majority of the responses from secondary school students.

Self-awareness is different for different individuals. While some had no idea what self-awareness meant but the majority of the students knew the meaning of self-awareness quite well. According to the majority of students, self-awareness is all about understanding oneself and is the first step to self-improvement and it is the ability to see

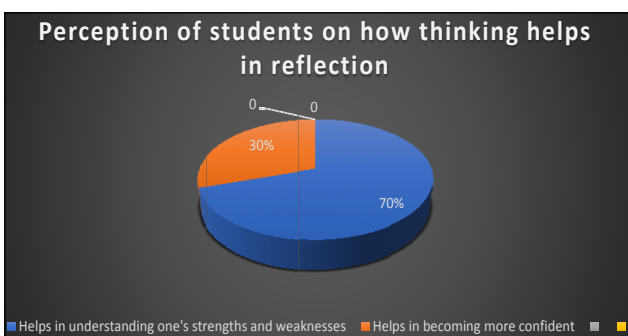
things clearly. It makes the comprehension of things easy. Online learning, in the post-pandemic period has not only made the students more lethargic but has also added to the stress level of students. Self-awareness plays a major role in making the students realize their strengths and weaknesses. The majority of the students felt that being self-aware helped them in becoming more proactive, helped in self-development, and enhanced their level of communication. Self-awareness and introspection can increase the level of understanding among secondary school students and can also initiate better decision-making skills. Self-awareness not only encourages better awareness of the self but also enhances the effective and efficient working of an individual, it can also help in realizing the strengths and weaknesses of an individual and also initiates self-realization.

**Objective 2:** To explore the role of Metacognition in supporting secondary school students in their adjustment to online learning.



**Fig. 4:** Students' perception of questioning their thoughts

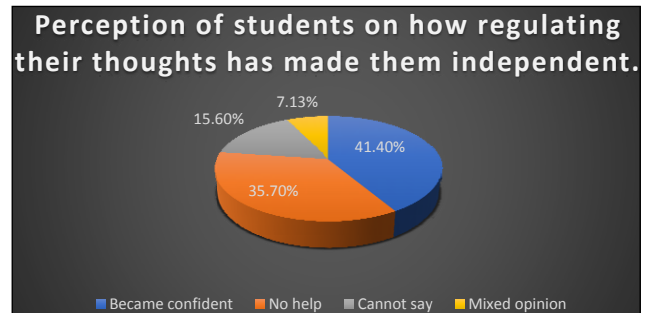
The above data analysis showed that the majority of students were able to question their mental processes and the thoughts that come from them. It can turn out to be a useful tool in encouraging self-development in a student.



**Fig. 5:** Perception of students on how thinking helps in reflection

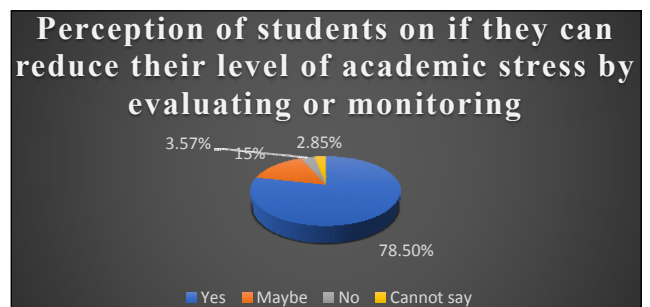
Secondary school students are at an age where their bodies are changing rapidly with their hormones. Questioning one's own thoughts and mental processes at this age can turn out to be very beneficial at this stage.

The students not only can become independent by self-regulating their thoughts but also can work according to their strengths and weaknesses. Providing oneself with feedback and questioning one's own thoughts and mental processes at this age can turn out to be very beneficial at this stage.



**Fig. 6:** Perception of students on how regulating their thoughts has made them independent

The above analysis of data shows that regulating their own thoughts and functioning according to them made the students more independent in accordance with their thoughts and mental processes. The students not only can become independent by self-regulating their thoughts but also can work according to their strengths and weaknesses. Providing oneself with feedback and questioning one's own thoughts and mental processes at this age can turn out to be very beneficial at this stage.



**Fig. 7:** Perception of students on whether they can reduce their level of academic stress by evaluating or monitoring

Students were able to comprehend their problems and work according to them. Self-awareness can turn out to be a very important tool in understanding oneself and where one is lacking. If a student is not

able to recognize their negative thoughts and work according to them, they may feel low and stressed at one point in time. It can result in anxiety and stress among students.

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## CONCLUSION

The academic performance at the stage of secondary level lays the foundation for a student's higher education and future events. Due to the switch to the online learning style, secondary school students got robbed of many learning opportunities, a healthy competition, and also were not able to maintain a balance between academic performance and personal and mental well-being resulting in deterioration in terms of educational outcomes. It, therefore, became imperative to understand the sources and impact of academic stress to derive adequate and effective intercession strategies. With the help of various Stress management techniques, the students were able to minimize academic stress resulting from online teaching-learning.

Various metacognitive strategies were used by the teachers such as introspection, reflection, self-realization, and self-awareness to help the secondary school students deal with the academic stress that comes with online learning. And those metacognitive strategies turned out to be beneficial for the students to overcome stress.

## Educational implications of the study

The findings of this research study have implications for various stakeholders, including students, parents, and teachers in addressing the role of metacognition in curbing academic stress among students due to

online learning. It was discovered that an increase in academic stress is responsible for affecting students' motivation, confidence, and academic performance and metacognition plays a vital role in curbing academic stress among students. As a result, various measures must be implemented by all stakeholders to manage academic anxiety and employ the use of metacognitive techniques to curb the level of academic stress among students. Self-regulation techniques and introspection strategies should be employed by the parents in day-to-day conversations they have with their children. Parents should make sure that the child is self-aware and understands what to do if something goes wrong. They should maintain constant touch with the teachers of their children. On the other hand, teachers should be able to manage academic stress among students. They should inculcate confidence among the learners, teach them the best strategies for examination preparations, motivate them to seek support, etc. Teachers should create a low-stress environment that allows students to concentrate on their studies rather than being distracted by academic anxiety.

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