EFFECT OF METACOGNITIVE STRATEGIES ON ACADEMIC SELF EFFICACY AND ACADEMIC ACHIEVEMENT OF THE COMMERCE STUDENTS

***Dr. Enu Sambyal**

ABSTRACT:

The monitoring or control of any aspect of cognition, such as any cognitive process, is referred to as metacognition. The objective of the present study was to examine that how metacognitive strategies has its effect on academic self efficacy and academic achievement. 110 students of commerce stream of three private schools were taken as sample. The sample was divided into two groups, in which one group was control group and other one was experimental group which were facilitated with the intervention program containing metacognitive strategies on different commerce topics. Different tools were administered on both the groups during pre-test and after intervention same tools were administered on both the groups. After analysing the data, it was found that metacognitive strategies have significant impact on academic self efficacy and academic achievement of the commerce students, whereas positive relationship was found between academic self efficacy and academic achievement of the students.

Keywords: Metacognitive Strategies, Academic Self efficacy, Academic Self efficacy

INTRODUCTION

All those who work in the subject of psychology consider metacognition to be more exploring. It must be taught in the classroom so that the idea of thought is highlighted as an undisputable fact. It is also seen as a measure of a trained mind or trained thought. Metacognitive education is referred to as a proactive shift in education where the significance of utilising such strategies and procedures is emphasised. Further, we can state that metacognitive thinking governs and directs a person's thoughts for addressing an issue, assuming a meaning, and deciding on an appropriate strategy. We can enable the children to understand their own thought processes through a few different techniques. Their capacity to govern their own learning is increased by this awareness of the learning process. Additionally

*Assistant Professor, Chandigarh College of Education, Landran, Mohali

it improves a person's capacity for self-control and for controlling their own learning motivation.

MEANING OF METACOGNITION

Flavell was the first person to define metacognition as knowledge of consciousness or cognition about cognition. A person's awareness of and control over his ideas and cognitive processes is referred to as metacognition by Swanson. The technique of using cognitive processes to improve thinking abilities or the standard of learning and thinking is known as metacognition. A person's knowledge of cognition and mental processes, as well as his capacity to control those processes, are referred to as their metacognition.

Flavell (1976) defined metacognition as, "One 's knowledge concerning one 's own cognitive processes and products or anything related to them and refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes, usually in the service of some concrete goal or objective."

"Thinking about thinking" is the most straightforward definition of metacognition. Effective learners have "self-control," which means they are conscious of their learning process and are able to gauge how effectively they are picking up new information as they study.

METACOGNITIVE STRATEGIES

Metacognitive strategies are employed to organise, monitor, and control the cognition process in order to achieve a goal (Zimmerman & Martinez-Pons, 1986). When a learner plans in some way before attempting a task, that is an illustration of metacognitive knowledge. Students that are aware of their metacognition knowledge will therefore be able to utilise

their information more effectively in their learning process. Supporting students' metacognitive development is essential since it can be a key factor in their success in learning because they will be able to control their own learning progression.

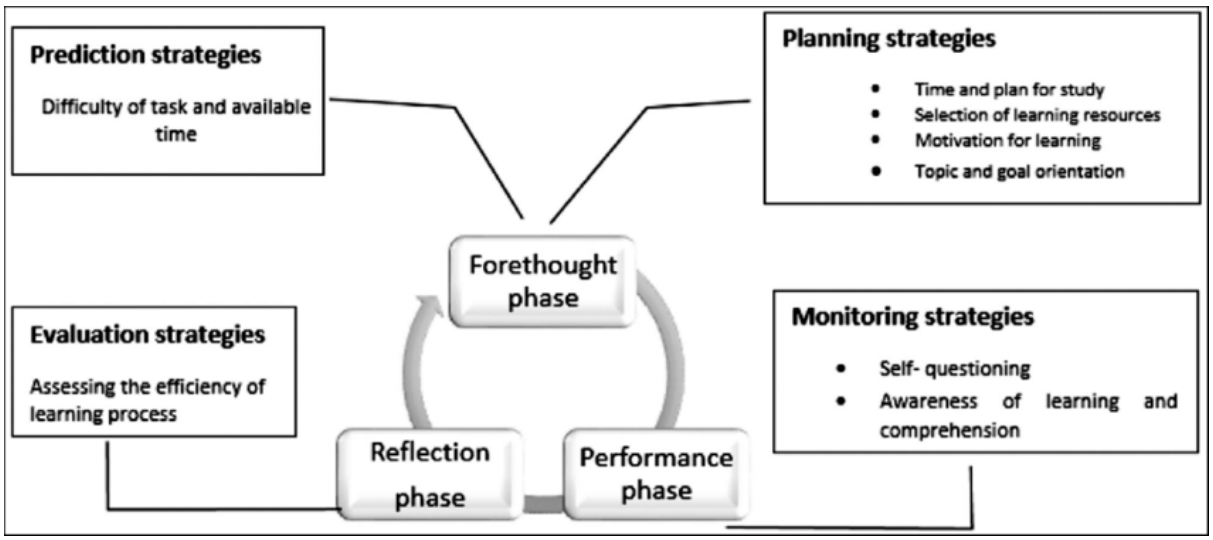

Fig 1.1 Application of metacognitive techniques in Zimmerman's three stages of learning self-regulation

According to Zimmerman (1989) metacognition consists of three strategies: planning, monitoring and regulation strategies. In order to regulate one's own learning and thinking, a learner needs to engage in metacognitive methods (Schraw and Moshman, 1995). It relates, in other words, to the dynamic features of converting information into action.

1. Planning: Planning is the process of making a plan to address an issue or selecting and organising pertinent materials, and finishing a task. In the planning process students are expected to define goals, objectives and conduct analyses. Tasks, choose suitable material, and establish plans.

2. Monitoring: Monitoring is a cognitive process that involves reviewing how well the objectives were achieved, making self-evaluations to inspire new research, and providing feedback. Students are expected to discern between their effective and ineffective performances during the monitoring strategy and to select the necessary and suitable strategies.

3. Evaluation: This is the process of determining how well pupils are conducting cognitive exercises and how their learning is progressing. It also refers to the choice a person made on

the value of the instructional materials and methods employed during the learning process. Students are expected to revaluate their learning objectives, modify and correct their predictions, and reinforce their intellectual accomplishments and acquisition during the evaluation approach.

In other words, processes created for students to "think" about their "thinking" are referred to as metacognitive strategies. These techniques are used to assist students comprehend how they learn. By assisting them in creating an effective plan for acquiring knowledge that can be memorised and eventually become habitual, teachers who employ metacognitive tactics can have a positive impact on children with learning problems. Students that are conscious of their learning processes will employ these methods to efficiently learn new material and, as a result, develop greater levels of independence in their thinking.

ACADEMIC SELF EFFICACY

In a broader sense, self efficacy refers to self-conviction and effectiveness in achieving one's career-related academic, professional, personal, social, national, and international goals and objectives. Depending on the area of activity, there are different ways to display self-efficacy. In the first case, there are several clear approaches to elaborate self-efficacy. One can develop self efficacy when they complete any specified activity or project successfully on a broad scale. One feels self-motivated when they have confidence in their ability to complete any task. In the academic setting, students' self efficacy beliefs—those about their capacity to do academic tasks successfully—are excellent indicators of their capacity to do so (Bandura, 1997; Skaalvik&Skaalvik, 2008). It must be evaluated at a level that is specific to the outcome domain because it is a multidimensional concept that varies depending on the domain of demands (Zimmerman, 2000; Bandura, 1986; Pajares, 1996).

ACADEMIC ACHIEVEMENT

The word "academic achievement" refers to the level of performance in various subjects as indicated by grades or grade points. It could be a learned aptitude for performing well in intellectual courses. The marks or grade received in a subject that is taught in school as a result of a written or oral examination is thus characterised as academic success. Academic success has traditionally been measured against these grades or scores. Academic achievement also refers to a student's level of mastery in disciplines including language,

math, science, and others as evidenced by their school grades. A student's academic success can be significantly predicted by looking at his school performance, which determines whether he is a high or low performer. Every school gives its students grades or marks, which are sources of information about the student. They allow the learner to compare his performance to that of his peers.

REVIEW OF LITERATURE

Khan and Khan (2016) conducted a study with the objective to examines the metacognitive reading methods used by IX grade students in Aurangabad city's English medium schools and on how they relate to their academic success in science. 100 IX-grade students from English-medium schools in Aurangabad city participated in the study. An instrument called "Metacognitive Awareness of Reading Strategies" created by Mokhtari and Richard was used to assess the metacognitive techniques employed by students (2002). The results show a moderately positive relationship between metacognitive reading strategies and science academic success. The results also show that female students had more advanced metacognitive skills than male students.

Singh (2017) conducted a study of commerce students' metacognitive skills in connection to academic success. The goal of the current study was to examine how +1 commerce students' metacognitive skills relate to their academic performance. 200 students were randomly chosen from the +1-commerce grade at various Amritsar district schools. The metacognitive ability inventory by Punita Govil was used to gather the data. The findings were put to use to make recommendations for employing metacognitive skills to enhance academic performance.

Yıldız & Akdağ(2017)done a research work, the aim of the study was to investigate the effects of the metacognitive methods used in the Science and Technology Education-II course on prospective teachers' metacognitive awareness, self efficacy beliefs in scientific instruction, and teacher self efficacy beliefs. The sample consisted of 87 third-graders from the Primary Education Department of the Faculty of Education at Cumhuriyet University in Sivas, Turkey. The findings showed that metacognitive techniques raised students' self efficacy views to teach science but not prospective teachers' metacognitive awareness or teacher self efficacy beliefs as compared to the pre-test.

Hayat, Shateri.(2019) performed a study on the Role of Academic Self efficacy in Improving Students' Metacognitive Learning Strategies .In the current study, 225 medical students from Shiraz University of Medical Sciences were chosen by simple random sampling as part of a quantitative cross-sectional research design utilising the Smart-PLS 3 methodology. The findings revealed a strong and favourable association between self efficacy and planning (r=0.24, p0.001), monitoring (r=0.30, p0.001), and regulating (r=0.31, p0.001). Additionally, self efficacy had a direct, advantageous, and statistically significant impact on metacognitive learning techniques (=0.42, p0.001).

Šafranj, J. (2019) researched a study on the effect of meta-cognitive strategies on self efficacy and locus of control of gifted in foreign language learning .In this study, gifted university students who are good at learning foreign languages are examined for their locus of control and self efficacy in relation to cognitive and metacognitive methods. 39 engineering students were chosen at random to participate in the survey. The findings demonstrate that cognitive methods have large and favourable effects on academic self-efficacy, whereas metacognitive tactics have favourable effects on gifted students' locus of control.

Hayat, Shatery, Amini, and Shokrpour (2020) conducted a study on Relationships between academic self-efficacy, learning-related emotions, and Metacognitive learning strategies with academic performance in medical students. The survey study involved two surveys that were done one month apart and included 105 undergraduate students who were enrolled in a Japanese institution. The application of planning technique improved self-efficacy, according to cross-lagged structural equation modelling. It was discovered that (a) monitoring techniques nearly directly affected cognitive strategies and (b) self efficacy mediated metacognitive strategies improved general learning behaviours. According to the current study, metacognitive methods are not the same as general learning behaviours and cognitive strategies.

Celik (2022) conducted a study on the Effect of Metacognitive Strategies on Self-Efficacy, Motivation and Academic Achievement of University Students. 354 university students who obtained preparatory instruction at the School of Foreign Languages at Gazi University took part in the study during the 2019–2020 academic year. To investigate the connections between the study's variables, a route analysis model was created and evaluated. It was found that self efficacy positively influences academic achievement in reading classes both directly

and indirectly in the tested model. Self-efficacy, followed by the metacognitive variable, was found to have the greatest impact on academic accomplishment.

OPERATIONAL DEFINITIONS

Metacognitive strategies: In the present study metacognitive strategies means the methods used in the classrooms settings for the students to know their own thinking process as well as the ability to monitoring their own thoughts, which will lead them to regulate their self-knowledge. In this research work, Investigator used think aloud, mnemonic aids and listen read discuss as a metacognitive strategy.

Academic Self-efficacy: In this study self efficacy is a person's thinking, behavior and feeling towards his /her own ability to succeed in a particular situation. In the present study only, academic self efficacy is taken into consideration. Academic self efficacy is defined as "a person's perception towards their ability to complete an academic task successfully at a predetermined level or obtain a definite academic objective.

Academic Achievement: Academic achievement is the competence and knowledge a student demonstrates during a class period, typically measured in terms of marks or a grade. Final results from the CBSE 10th Class Examination were used in the current study as a measure of academic achievement.

Commerce: In the current study commerce is taken as a subject of study prescribed for higher secondary students of Chandigarh. The topics of standard XI business studies text book are chosen in this study, which includes Trade and aids to trade, Business services, Marketing and consumer protection.

OBJECTIVES OF THE STUDY

1. To develop a metacognitive strategy model on commerce subject for XIth standard students.

2. To find out the effect of metacognitive strategies on the academic self efficacy of the commerce students

3. To find out the effect of metacognitive strategies on the academic achievement of the commerce students

4. To find out the relationship between Academic Self efficacy and Academic achievement of the commerce students

HYPOTHESIS OF THE STUDY

1. There exists a significant impact of metacognitive strategies on the Academic self-efficacy of the commerce students.
2. There exists a significant impact of metacognitive strategies on the Academic achievement of the commerce students
3. There exists a significant relationship between academic self efficacy and academic achievement of the commerce students.

SAMPLE OF THE STUDY

The population of the current study is composed of 11th grade commerce students enrolled in Chandigarh senior secondary schools that are C.B.S.E. affiliated. Out of 32 senior secondary private schools having commerce stream and the researcher used lottery method to choose three schools. In each school total number of students in commerce stream was 40students in average. So,in the preliminary stage 120 pupils have been selected as a representative sample from this group using the purposive and random sampling techniques, but later on it got reduced to 110 students due to absentees.

TOOLS

The present study was conducted with the help of following four standardized questionnaires

1. Intervention program on Metacognitive strategiesdeveloped by the investigator
2. Metacognitive Awareness Inventory by Schraw and Dennison (1994)
3. Academic Achievement test of commercedeveloped by investigator
4. Academic self efficacy by Abdul Gafoor K. and P. Muhammed Ashrawas

DESIGN OF THE STUDY

Experimental Method was employed in the current study for the research. Two distinct groups were created: an experimental group and a control group in each school on the basis

of the scores scored by the students after administering the Metacognitive Awareness Inventory by Schraw and Dennison**.** Metacognitive awareness tool help the researcher to identify the student's cognition level. According to the manual of the tool those students whose scores were high were categorise under experimental group whereas those students who have scored average, they were categorise under control group. The experimental group's students received intervention programme using metacognitive strategies, while the control group's students received instruction using a traditional approach. Finally, the cause-effect relationship between the two groups was quantitatively examined on the basis of pre-test and post-test scores.24 lesson plans were delivered to the experimental group using three different metacognitive strategies i.e., Mnemonic aids, Concept Mapping and Think aloud.

PROCEDURE

In this stage experimentation study was conducted in three phases.

S.No	**Experiment Group**	**Control Group**
1.	**Pre-Test** • Metacognitive Awareness Inventory by Schraw and Dennison • Academic self efficacy by Abdul Gafoor K. and P. Muhammed Ashrawas • Academic Achievement test of commerce	
2.	Metacognitive strategies (think aloud, mnemonic aids and concept mapping)	Traditional method(Chalk and Talk method)
3.	**Post Test** • Metacognitive Awareness Inventory by Schraw and Dennison • Academic self efficacy by Abdul Gafoor K. and P. Muhammed Ashrawas • Academic Achievement test of commerce	

STATISTICAL TECHNIQUES USED IN THE STUDY

For the present study inferential statistics like Pearson's Product Moment Coefficient of Correlation (r) were used to find out the relationship between academic self efficacy and academic achievement and chi square wasused in the study to evaluate the effect of the variables.

RESULTS AND FINDINGS

Hypothesis 1

There exists a significant impact of metacognitive strategies on the Academic self efficacy of the commerce students.

Table 1 Chi square Representing the effect of metacognitive strategies on the academic self efficacy of the students

		Value	df	Asymp. Sig. (2-sided)
Metacognitive Strategies * Self Efficacy	Pearson Chi-Square	3850.000[a]	1225	.000
	Likelihood Ratio	740.090	1225	0.950
	Linear-by-Linear Association	109.000	1	.000
	N of Valid Cases	110		

As shown in table 1 above the p value for variable metacognitive strategies and self efficacy is 0.00 which is less than 0.05 thus we accept the alternative hypothesis H1 which states that Metacognitive strategies have a significant impact on the academic self efficacy of the commerce students.

Hypothesis 2

Metacognitive strategies have a significant impact on the academic achievement of the commerce students

Table 2 : Chi-square representing the effect of metacognitive strategies

Metacognitive Strategies * Academic Achievement	Pearson Chi-Square	1239.559[a]	1085	.001
	Likelihood Ratio	462.827	1085	0.975
	Linear-by-Linear Association	23.761	1	.000
	N of Valid Cases	110		

As shown in Table 2 above the p value for variable metacognitive strategies and academic achievement is 0.01 which is less than 0.05 thus we accept the hypothesis H2 which states

that Metacognitive strategies have a significant impact on the academic achievement of the commerce students

Hypothesis 3

There is significant relationship between academic self efficacy and academic achievement of the commerce students.

Table 3 Correlation between academic self efficacyand academic achievement of the commerce students.

		Academic Achievement
Academic Self efficacy	Pearson Correlation	.504**
	Sig. (2-tailed)	.000
	N	110

Table no 3 depicts that there is positive relation between academic self efficacy and academic achievement of the commerce students. And the sig value of the relation i.e. 0.00 are less than 0.05. Thus, we accept the alternative hypothesis which states that there is significant relationship between academic self efficacy and academic achievement of the commerce students.

EDUCATIONAL IMPLICATIONS

In order for students to understand their own thought processes and build knowledge based on their learning, teachers should incorporate metacognitive techniques into their lesson plans. Students should employ metacognitive techniques in order to enhance learning outcomes and support the development of both their existing and future skill sets. According to current research, students who use metacognitive approaches to improve their performance score well in school. Additionally, metacognitive practices aid students in understanding their areas of strength and weakness, which can help them live successful lives. Independent thinkers are often more imaginative and excellent researchers and a nation can grow abundantly with the help of these kind of human resources.

REFRENCES

- Azevedo, R., &Aleven, V. (2013). Metacognition and learning technologies: An overview of current interdisciplinary research. In R. Azevedo & V. Aleven (Eds.), *International handbook of metacognition and learning technologies,* Springer international handbooks of education (Vol. 28, p. 1e16). Springer. https://doi.org/10.1007/978-1-4419-5546-3_1.
- Amal, M. F., & Mahmudi, A. (2020). Enhancing students' self efficacy through metacognitive strategies in learning mathematics. *Journal of Physics: Conference Series*, *1613*(1), 012061. https://doi.org/10.1088/1742-6596/1613/1/012061
- Bandura, A. (1993). Perceived self efficacy in cognitive development and functioning. *Educational Psychologist*, 28, 117-148.
- Barenberg, J., Dutke S. (2019). Testing and metacognition: retrieval practise effects on metacognitive monitoring in learning from text. *Memory*, 27(3), 269–279.
- Cao, Y. (2012). A study of metacognitive strategies in web-based English autonomous learning. *International Conference on Management and Education Innovation IPEDR*, 37, 66–69. IACSIT Press, Singapore.
- Celik, B. (2022). The effect of Metacognitive strategies on self-efficacy, motivation and academic achievement of University students. *Canadian Journal of Educational and Social Studies*, *2*(4). https://doi.org/10.53103/cjess.v2i4.49
- Diaz, I. (2015). Training in Metacognitive Strategies for Students' Vocabulary Improvement by Using Learning Journals. (EJ1051498).
- Ellis, A. K., Denton, D. W., & Bond, J. B. (2014). An analysis of research on metacognitive teaching strategies. Procedia - *Social and Behavioural Sciences*, 116, 4015–4024. https://doi.org/10.1016/j.sbspro.2014.01.883.
- Farhat Ayuub Khan, & Suhail Ahmed Khan. (2016). Metacognitive reading strategies in relationship with scholastic achievement in science of ix standard students of English medium schools in Aurangabad city. *MIER Journal of Educational Studies Trends & Practices*, 119-129. https://doi.org/10.52634/mier/2013/v3/i1/1564
- Hayat, A.A., Shateri, K., Amini, M. *et al (2020)*. Relationships between academic self-efficacy, learning-related emotions, and metacognitive learning strategies with academic performance in medical students: a structural equation model. *BMC Med Educ* 20, 76 (2020). https://doi.org/10.1186/s12909-020-01995-9

- Karaali, G. (2015). Metacognition in the classroom: Motivation and self-awareness of mathematics learners. *PRIMUS*, *25*(5), 439-452. https://doi.org/10.1080/10511970.2015.1027837
- Moir, T. (2022). Metacognitive strategies and how to teach them. *How to Create Autonomous Learners*, 93-102. https://doi.org/10.4324/9781003315728-10
- Singh, P. (2017). A study of Metacognitive ability of commerce students in relation to academic achievement. *Scholarly Research Journal for Interdisciplinary Studies*, 5*(43*). https://doi.org/10.21922/srjis.v5i43.11212
- Šafranj, J. (2019). The effect of meta-cognitive strategies on self efficacy and locus of control of gifted in foreign language learning. *Research in Pedagogy*, *9*(1), 40-51. https://doi.org/10.17810/2015.90
- Yıldız, H., &Akdağ, M. (2017). The Effect of Metacognitive strategies on prospective teachers' Metacognitive awareness and self efficacy belief. *Journal of Education and Training Studies*, 5*(12)*, 30. https://doi.org/10.11114/jets.v5i12.2662
- Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal, 23(4)*, 614–628.
- The effect of Metacognitive strategies on self-efficacy, motivation and academic achievement of University students. (2022). *Canadian Journal of Educational and Social Studies*, 2*(4)*. https://doi.org/10.53103/cjess.v2i4.49