MATHEMATICS LEARNING STRATEGIES OF COLLEGE STUDENTS

R.Saraswathy, Research Scholar,

Dr.T. Nagavalli, Research Guide & Associate Professor of Mathematics,

Sri Sarada College of Education(Autonomous),Salem.

ABSTRACT

Learning plays a very important role in determining the behavior of an individual. It is the basis of success in life. Learning strategies are an individual's approach to a task. It describes how a student organizes and uses a set of skills to learn content or to accomplish a particular task more effectively and efficiently either in or out of school. A student's achievement is an academic variable that has been regarded as a function of many factors. One of the most important factors in this achievement is learning strategies. Learning strategies are a plan of actions that facilitate learning. They include cognitive, metacognitive, and motivational strategies. This research paper aims to investigate mathematics learning strategies among college students in Salem district based on four factors namely Cognitive, Metacognitive, Non-informational resources management and Informational resources management. The study included the categorical variables gender, locality, medium, and type of colleges.148 students from various Government, Government Aided, and Private Colleges in and around Salem district were involved. The normative survey method was adopted and stratified sampling technique was employed for the study. 30-item Mathematics learning strategies scale which was a standardized tool constructed by Pintrich et.al (1991) was used. Its reliability value was 0.8. The data collected were subjected to statistical techniques like Percentage analysis, t - test and F-test. The finding of this study reveals that male students have better Mathematics learning strategies than female students.

INTRODUCTION

 "Learning strategies are techniques, approaches or deliberate actions that students take in order to facilitate the learning, and recall of both linguistic and content area information".Students adopt strategies for mathematics learning. By consciously adopting effective learning strategies, students learn more effectively than if they only followed the teachers' instructions. Theories suggest that student-level inputs can affect the processes of learning, thinking, and test-taking, which influence learning motivation and educational aspirations. Pintrich proposed a model of self-regulated learning that included three general categories of strategies:

Cognitive learning strategies

Cognitive learning strategies are classified into rehearsal, elaboration and organisation. Rehearsal strategies are used to enhance encoding and information retrieval; elaboration strategies add detail, explanation, and other information from prior knowledge and organisational strategies inform in a form unique to the individual learner's requirements.

Metacognitive strategies

Metacognitive strategies refer to methods used to help students understand the way they learn and refer to the processes designed for students to manage, monitor and evaluate their learning and 'think' about their 'thinking'.

Resource management strategies

Resource management strategies help students adapt to their environment as well as change the environment to fit their learning goals and needs. Tasks and environmental strategies afford students the opportunity to learn, and indirectly contribute to the learning goal of the student.

REVIEW OF LITERATURE

Javier Gasco et al.,(2013) investigated the differences in the use of learning strategies in Mathematics in 8th and 9th grade. The findings showed statistically significant differences in favour of 9th grade students in the employment of organization, metacognition and help seeking strategies.

Hossein Khani Arani and Sajad Davoudi Mobarakeh, (2012) did a study on Metacognitive Strategies and Logical/ Mathematics Intelligence in EFL context investigating possible relationships. Data analysis revealed that logical/Mathematics intelligence had a significant relationship with metacognitive strategies in EFL context. Moreover, male and female, except for logical/Mathematics intelligence usage, didn't have any significant difference in the application of metacognitive strategies.

Eric ZhiFeng,(2010) conducted the surveyed mathematics motivated strategies for learning of grade 10–12 Taiwanese students. The result reported that the male students showed higher motivation for learning mathematics, and male students also used learning strategies better than female students.

STATEMENT OF THE PROBLEM

The statement of the problem is **"MATHEMATICS LEARNING STRATEGIES OF COLLEGE STUDENTS"**

OBJECTIVE OF THE STUDY

1. To find out the level of mathematics learning strategies of college students
2. To study the mathematics learning strategies of college students

HYPOTHESES OF THE STUDY

1.The level of mathematics learning strategies of college students is high

2.There is no difference in the mathematics learning strategies of college students based on the select sub samples gender, locality, medium of instruction, and type of college.

RESEARCH METHOD

Method

The normative survey method was adopted for the study.

Sample

 The stratified random sampling technique was employed 148 students from 4 colleges were selected from Government, Government Aided, and Private colleges in Salem district for the study.

Tool

The standardized 30 item Mathematics Learning Statergy Scale developed by Pintrich et al (1991) was used. Its reliability value was 0.8 under the four factors i.e., Cognitive strategies, Metacognitive strategies, Non informational resources management, and Informational resource management.

Data analysis

The collected data were analysed by using statistical techniques like percentage analysis, mean, standard deviation, t-test and F- test.

Table 1

LEVEL OF MATHEMATICS LEARNING STRATEGIES OF COLLEGE STUDENTS WITH REFERENCE TO TOTAL SAMPLE

FACTORS	LOW		MODERATE		HIGH	
	N	%	N	%	N	%
Cognitive strategies	33	22.30	96	64.86	19	12.84
Metacognitive strategies	30	20.27	77	52.03	41	27.70
Non informational resources management	25	16.89	89	60.14	34	22.97
Informational resources management	30	20.27	98	66.22	20	13.51

 The above table shows that college students are in moderate level based on the four factors of mathematics learning strategies.

Hypothesis 1

There is no difference in the mathematics learning strategies of college students based on the select sub samples: gender, locality, medium of instruction, and type of college.

Table 2

TABLE SHOWING THE t VALUE OF MATHEMATICS LEARNING STRATEGIES

VARIABLE	FACTOR	GROUP						t VALUE	REMARK
		MALE			FEMALE				
		N	M	SD	N	M	SD		
Gender	Cognitive strategies	62	73.89	13.06	86	68.98	11.55	2.37	S
	Meta cognitive strategies		49.44	7.70		44.42	8.60	3.72	S
	Non informational resources management		98.34	21.46		89.15	18.01	2.75	S
	Informational resources management		51.97	12.31		48.84	9.38	1.68	NS
	Total		273.63	41.68		251.38	42.00	3.19	S
		RURAL			URBAN				
		N	M	SD	N	M	SD		
Locality	Cognitive strategies	87	72.69	11.65	61	68.67	13.14	1.92	NS
	Meta cognitive strategies		46.97	9.01		45.89	7.95	0.77	NS
	Non informational resources management		95.37	19.67		89.62	20.10	1.73	NS
	Informational resources		51.94	9.81		47.59	11.63	2.39	S

		TAMIL			ENGLISH			
	management							
	Total		266.97	42.02		251.77	43.51	2.12	S

		TAMIL		ENGLISH				
		N	M	SD	N	M	SD		
Medium of instruction	Cognitive strategies	46	71.15	12.21	102	70.98	12.55	0.08	NS
	Meta cognitive strategies		46.30	9.01		46.62	8.42	0.20	NS
	Non informational resources management		94.91	19.14		92.14	20.38	0.80	NS
	Informational resources management		50.67	9.60		49.91	11.31	0.42	NS
	Total		263.04	44.26		259.65	42.82	0.44	NS

(The table value is 1.96 at 5% level of significance)

From the above table, it is found that there are no significant differences. It is concluded that the hypothesis is accepted in six cases. As there is significant difference in nine cases, it is concluded that the hypothesis is not accepted in this case.

FINDINGS

1. Male and Female college students differ in three factors of mathematics learning strategies and in toto but they do differ in one factor of mathematics learning strategies.

2. College students of different locality do not differ in Cognitive strategies, Meta cognitive strategies, Non informational resources management of mathematics learning strategies but they do differ in Informational resources management and mathematics learning strategies in toto.

3. Tamil and English medium college students do not differ in all the factors of mathematics learning strategies and in toto.

Table 3

TABLE SHOWING THE F VALUE OF MATHEMATICS LEARNING STRATEGIES

DIMENSION		SUM OF SQUARES	DF	MEAN SQUARE	F	LEVEL OF SIGNIFICANCE
Cognitive strategies	Between Groups	8102.71	2	4051.35	40.49	Significant
	Within Groups	14510.12	145	100.07		
Metacognitive strategies	Between Groups	3046.36	2	1523.18	28.44	Significant
	Within Groups	7764.58	145	53.55		
Non informational resources management	Between Groups	9733.92	2	4866.96	14.41	Significant
	Within Groups	48966.08	145	337.70		
Informational resources management	Between Groups	3867.87	2	1933.93	21.23	Significant
	Within Groups	13208.86	145	91.10		
Total	Between Groups	92951.41	2	46475.71	37.28	Significant
	Within Groups	180773.50	145	1246.71		

From the above table, it is noted that there are significant differences in all the cases. Hence the hypothesis is not accepted.

FINDINGS

Different types of college students differ in all the factors of mathematics learning strategies.

MAJOR FINDINGS

Cognitive Strategies

1. Male college students have higher mean value (73.89) than female college students (68.98).
2. Rural college students have higher mean value (72.69) than urban college students (68.67).
3. Tamil medium students have higher mean value (71.15) than English medium students (70.98).
4. Private college students have higher mean value (76.31) than Government Aided (60.62), Government (75.72) college students.

Meta Cognitive Strategies

1. Male college students have higher mean value (49.44) than female college students (44.42).
2. Rural college students have higher mean value (46.97) than urban college students (45.89).

3. English medium students have higher mean value (46.62) than Tamil medium students (46.30).

4. Private college students have higher mean value (50.44) than Government Aided (52.24), Government (42.72) College students.

Non Informational Resources Management

1. Male college students have higher mean value (98.34) than female   college students (89.15)

2. Rural college students have higher mean value (95.37) than urban college students (89.62)

3. Tamil medium students have higher mean value (94.91) than English medium students (92.14).

4. Private college students have higher mean value (100.79) than Government Aided (96.06), Government (81.28) College students.

Informational Resources Management

1. Male college students have higher mean value (51.97) than female college students (48.84).

2. Rural college students have higher mean value (51.94) than urban college students (47.59).

3. Tamil medium students have higher mean value (50.67) than English medium students (49.91).

4. Private college students have higher mean value (54.92) than Government Aided (52.24), Government (42.72) College students.

DISCUSSION ON THE FINDINGS

1. Javier Gasco et al (2013) showed statistically significant differences in favour of 9th grade students in the employment of organization, metacognition and help seeking strategies. In the present study most of the learners have moderate level of mathematics learning strategies.

2. Hossein Khani Arani and Sajad Davoudi Mobarakeh (2012) revealed that logical/mathematics intelligence had a significant relationship with metacognitive strategies in EFL context. Moreover, male and female college students except for logical/mathematics intelligence usage didn't have any significant difference in the application of metacognitive strategies. The present study reported that different types of college students do differ in metacognitive strategies of mathematics learning strategies.

3. Eric ZhiFeng (2010) reported that male students showed higher motivation for learning mathematics, and male students also used learning strategies better than female students. In the present study also male students used learning strategies better than female students.

CONCLUSION

The finding of this study is that male students used learning strategies better than female students and rural college students have better learning strategies than urban college students.

REFERENCE

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