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Effect of Memory Enhancing Strategies on Achievement in Science among High School Students of Coimbatore Educational District

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ABSTRACT

The preset study aims studying the effect of memory enhancing strategies on achievement in science among the high school students. Memory plays an important role in every one's life. Students life in the school age, the role of memory in learning is notable. Those students who face memory problems will prone to deficits in registering the information. Thus the study of memory becomes important and find out the various strategizes to enhance the memory of the students becomes essential. The present study was conducted among high school students. Experimental study was adopted. Samples were divided into two groups each consisting of 40 students. Achievement test tool constructed by the investigator was adopted to study the student's memory in science in relation to the study habit. The study resulted that there is a significant difference exist between the pretest and posttest. The students do no differ significantly in the control group. There is a significant difference exist between the experimental and control group in their memory. The study habit of the students also differs significantly in their memory techniques when the learn 2 hours and more than 2 hours.

INTRODUCTION

There is different learning styles (LS) exhibited by students though the same method or approach is employed during classroom instructions. There is no right or wrong learning style (Fatokun, 2012) and it has nothing to do with intelligence but with the way a person's brain works to learn and store information efficiently (Norman, 2008; Kolbs, 2005). Most students learn in essentially the same environment and learning can be highly efficient and effective if the learning situation is consistent with how students learn (Peverley, 1991). Since everyone learns differently, understanding learning style can help a teacher perform better by matching the teaching pattern with students learning style for appropriate understanding (Fatokun& Eniayeju,

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2014). Many students are being left behind by an educational system that some people believe is in crisis. Improving educational outcomes will require efforts on many fronts, but a central premise of this monograph is that one part of a solution involves helping students to better regulate their learning through the use of effective learning techniques. In the era of examinations, present day students have to remember a number of names, facts, ideas, formulas and concepts. In science learning they have to remember botanical names, Zoological names, names of elements, reactants products, their procedures, experiments, equations, structure, etc., while describing a procedure of chemical reaction more number of chemical substances come repeatedly. Here there may be chance to confuse. To avoid this confusion and also be clear during exam time, memory enhancing strategies were used. It helps to keep all these names, ideas, facts, formulas and concepts clearly in mind. Memory enhancing strategies are used to memories the complicated aspects in science. The main purpose of the study is to enhance the achievement in science of high school students with the help of memory enhancing strategies. In order to enhance the science achievement by improving the memory of the students, this study is undertaken.

NEED OF THE STUDY

Development of one country is basically depending upon the student's mental growth. The Students suffers a lot at high school level while studying science. They feel difficult in remembering the terms and concepts in science. Chemistry which is a part of the Science is very difficult for the students to learn. The symbols, naming procedures, equations difficult for the students to learn. To make the students feel more comfort in the learning process certain strategies and techniques are very essential. The students from very poor background are studying in government schools. Those students have to be trained and brought as golden flowers to the society. The Students knowledge should be improved in high level. Special attentions should be given for that. So the use of memory enhancing strategies is essential in education. It develops the mentality of interaction and collaboration. It can help students to save, record, edit and adapt their works quickly and efficiently. Hence the investigator was interested in knowing the effect of memory enhancing strategies on science achievement.

OPERATIONAL DEFINITION OF TERMS

Memory

The mental registration, retention and recall of past experience, knowledge ideas, sensations and thoughts. Registration of experience is favored by clear comprehension during intense consciousness memory for specific details differs greatly with individuals and with the content of the event (Cyclopedic Medical Dictionary, 1990).

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Effect

The result of an action or condition a consequence. The term has come to be applied to certain physical or chemical phenomena produced under specific conditions and usually of important theoretical significance (Butter worth's, 1978).

Enhance

Make increase (Hewine Mann, 2002). When something is improved or Formal to improve something

Strategy

A particular method used to be successful. (Hein Mann, 2002).The act of planning how to achieve something.

Science

The intellectual and practical activity encompassing the systematic study of the structure and behaviour of the physical and natural world through observation and experiment. (Cambridge leaner's dictionary, (2001).

Achievement

Something achieved, especially after effort, hard work, courage etc., The act of achieving (Heine Mann, 2002).

Students

Students who study in high school are the sample considered for the present study.

OBJECTIVES OF THE STUDY

- To find out whether there is any significant difference in science achievement between the pre- test and post-test mean score of the experimental group.
- To find out whether there is any significant difference in science achievement between the pre- test and post-test mean score of the controlled group.
- To find out whether there is any significant difference in science achievement between the post test mean score of the experimental group and controlled group.
- To find out whether there is any significant difference in science achievement between the post test mean scores of experimental group with respect to study habits.

HYPOTHESES OF THE STUDY

- There is no significant difference in science achievement between the pre- test and post-test mean score of the experimental group.

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- There is no significant difference in science achievement between the pre- test and post-test mean score of the controlled group.
- There is no significant difference in science achievement between the post test mean score of the experimental group and controlled group.
- There is no significant difference in science achievement between the posttest mean scores of experimental group with respect to study habits.

REVIEW OF RELATED LITERATURE

Ishak, Ismarul et.al (2012) conducted a Study on Working Memory and Academic Performance of Faculty of Health Sciences Students. Procedia - Social and Behavioral Sciences. The objective of this study was to determine the difference of working memory between gender, program, year of study, supplement intake, memorizing technique, study styles and sleep hours and also the association between working memory and Cumulative Grade Point Assessment (CGPA) among students in University Kebangsaan Malaysia (UKM).Visual Working Memory Test and Arithmetic Test was provided to 157 students and the data was collected related to memory. 24% had excellent memory and 70% moderate and 17% were poor memory. There is no significant in working memory score among the gender, year and program. Sleeping hours showed significance in memory. Correlation between the working memory and CGPA was not found. Bergman, Sissela et.al. (2017) conducted a study on how is working memory training likely to influence academic performance. Current Evidence and methodological consideration. Working memory was considered as one of the important core cognitive functions allowing one to keep information in mind for short period and work with it. The study suggested tow possible routes in which training can influence academic achievement among the students. One way is through effect on learning capacity which would thus be clearly seen with time and education. Working memory training and academic performance supports one another.

METHODOLOGY

In the present studyexperimental methodwas adopted for its suitability and accuracy, the research method is conceptual structural of research procedure which provides planning on selection of samples, data gathering device and data analysis techniques in relation to objectives of research. In order to determine the effect of Memory Enhancing Strategies on Achievement in Science researcher used pre-test and post test experimental design.

Methods of the Study

In the present study experimental method was adopted and simple random sampling technique was used among 80 students at IX standard students of Government High school,

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Coimbatore Educational District. From the school 80 students were taken and Pre- test is conducted. The male and female students are arranged separately according to their marks, arranged in descending order. The students are separated into two groups equally by giving number 1 and 2. Thus 40 Students are selected for Experimental group and 40 Students for Control group by Simple Random Probability Sampling technique. So, all the 80 students of class IX was considered as sample of the study. For that, tool on the Achievement test in Science developed by the investigator. The Achievement test in Science tool consists of 40 items. The researcher has taken only objective type questions. The test paper consists of choose the correct answer. Each question carries one mark. If the answer is correct one mark will be given if not zero.The questionnaire is self-constructed for the science topic and standardized by item analysis and the final draft of the questionnaire consist of 40 items after discarding the 5 items which has lower index value. The reliability of the test was found to be 0.93 which was calculated using the test retest method.

TESTING OF HYPOTHESES

Null Hypothesis – 1

There is no significant difference between the pre- test and post-test mean score of the experimental group.

Table – 1

Mean, standard Deviation and‘t’ values of pre-test Scores and post test Scores:

MAIN SAMPLES	N	MEAN	S .D	‘t’VALUE	SIGNIFICANCE AT 0.01 LEVEL
Pre- Test Scores of Experimental Group	40	39.8	11.65	**5.87**	**SIGNIFICANT**
Post -Test Scores of Experimental Group	40	69.9	8.34		

From the above table it is found that the t value calculated for the experimental group in relation to the pretest and posttest is (5.87) which is found to be more than the table value at 0.05 level of significance. The mean value also shows a great increase in the posttest when compared with that of the pretest. The standard deviation of the samples in pretest is more than the posttest,

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this implies that the samples in the posttest group are having higher mean and lower standard deviation. Hence, the null hypothesis is rejected and it is concluded that the pre- test and post - test scores of IX standard high school students differ significantly in theirmemory enhancing strategies on achievement in science.Therefore, the alternate hypothesis "There is no significant difference in science achievement between the pre- test and post-test mean score of the experimental group"

Null Hypothesis - 2

There is no significant difference between the pre- test and post-test mean score of the control group

Table – 2

Mean, standard Deviation and 't' values of pre-test Scores and post test Scores:

MAIN SAMPLES	**N**	**MEAN**	**S .D**	**'t'VALUE**	**SIGNIFICANCE AT 0.01 LEVEL**
Pre- Test Scores of Control Group	40	42	11.52	**0.093**	NOT SIGNIFICANT
Post -Test Scores of Control Group	40	42.6	11.16		

The t value calculated for the pretest and posttest for control group students show a t value (0.093) which is found to be less than the table value at o. o5 level of significance. The mean scores of the control group students is found to be similar in both pretest and posttest. This implies that there is no significant difference in the control group students in their pretest and posttest in control group. The null hypothesis is accepted and it can be said that, there is a no significant difference between the Pre-test and post test mean scores of control group.Therefore, the null hypothesis "There is no significant difference in science achievement between the pre-test and post-test mean score of the controlled group" is accepted

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Null Hypothesis - 3

There is no significant difference between the post tests mean score of the experimental group and control group. Table showing the Mean, standard Deviation, standard Error and't' values of post test Scores of experimental group and control group.

Table – 3

MAIN SAMPLES	N	MEAN	S .D	't'VALUE	SIGNIFICANCE AT 0.01 LEVEL
Post Test Scores of Experimental Group	40	69.9	8.34	**12.39**	**SIGNIFICANT**
Post Test Scores of Control Group	40	42.6	11.16		

From the above table it could be concluded that the t value calculated (12.39) is found to be higher than the table value at 0.05 level of significance The mean scores calculated for both the samples in control and experimental group differ significantly. The standard deviation of the samples also shows notable difference in standard deviation is also showing a notable difference. The null hypothesis is rejected and it can be said that, there is a significant difference between the post tests mean scores of experimental group with respect to the control group. It is concluded from the above table that, the students taught with memory enhancing strategies achieved more in the post test means scores than students taught with normal teaching. Therefore, the alternate hypothesis is "There is no significant difference in science achievement between the posttest mean score of the experimental group and controlled group"

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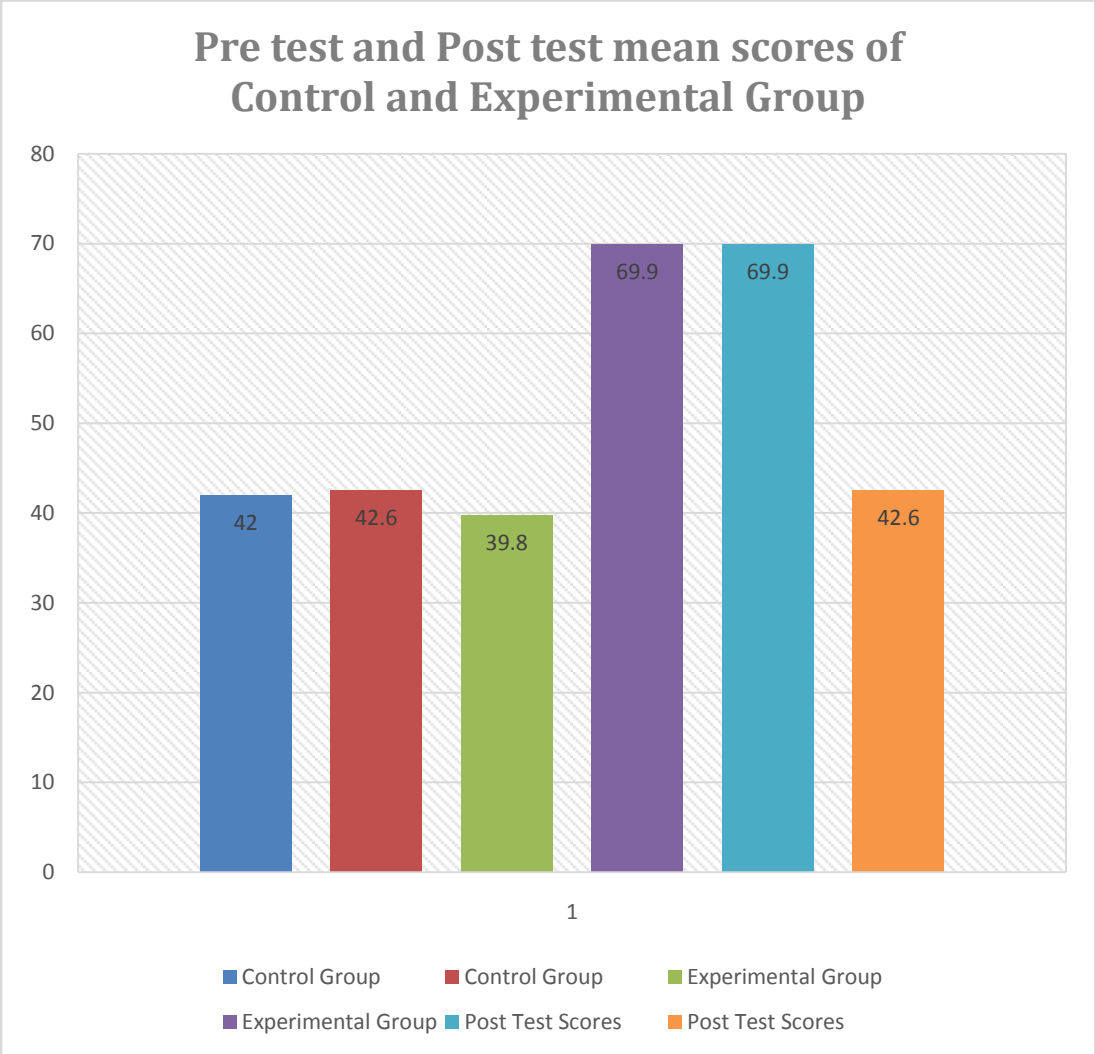

Figure 1

Pretest and Posttest mean scores of Control and Experimental Group

Null Hypothesis - 4

There is no significant difference between the post-test mean scores of science in experimental group with respect to Study habits. Table showing the Mean, standard Deviation, standard Error and 't' values of post test Scores of experimental group with respect to Study habits.

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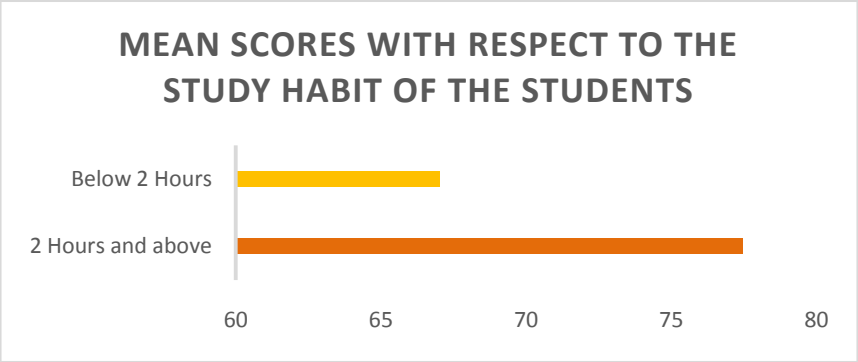
Table – 4

Table showing the Mean, standard Deviation, standard Error and 't' values of post test scores with respect to the study habit

MAIN SAMPLES	N	MEAN	S .D	't'VALUE	SIGNIFICANCE AT 0.01 LEVEL
2 Hours and above	11	77.45	5.73	**4.74**	**SIGNIFICANT**
Below 2 Hours	29	67.03	7.33		

From the above table it could be concluded that the samples in the experimental group I elation to the study habit are showing a considerable difference in the mean scores. The standard deviation calculated for the samples also shows some difference their standard deviation. The t value calculated (4.74) is found to be higher than the table value at 0.05 level of significance. The null hypothesis is rejected and it can be said that, there is significant difference between the post test mean scores of science in experimental group with respect to Study habits. Hence the null hypothesis "There is no significant difference between the post-test mean scores of science in experimental group with respect to Study habits" is rejected.

Therefore, the alternate hypothesis is "There is no significant difference in science achievement between the posttest mean scores of experimental group with respect to study habits".



MAJOR FINDINGS OF THE STUDY

1. There is significant difference in science achievement between the pre- test and post-test mean score of the experimental group.

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2. There is no significant difference in science achievement between the pre-test and post test mean scores of control group.
3. There is a significant difference in science achievement between the post test mean score of the experimental group and control group.
4. There is a significant difference in science achievement between the post test mean scores of experimental group with respect to study habits.

CONCLUSION AND RECOMMENDATIONS

Memory studies are essential since they are very much useful in making the learning n a betterment way. It also deals with the information's stored properly and processed and executed in a right way. The act of memory is linked with associating the new knowledge and old knowledge. From the differential analysis, it is found that the IX standard students of different categories differ significantly in their achievement in science. Our nation's improvement is based on our education system. The Government allocates sufficient funds and brings out vast changes in the education system year by year. Though changes occur teaching and learning process is very effective when memory enhancing strategies are used. Our nation in the hands of young one will develop only when the young ones are educated. With the memory strategies the young one' learn better and this would change both for the individual and the nation Hence it becomes mandatory to enable the training for the students through various memory training skills such as meditation, concentration, logical thinking, concept formation etc. This enables the learners to achieve academically and satisfy in their life.

REFERENCES

[1]. Albanese, Marie – Claire (2007) Evidence of Memory Representations of Somatosensory Stimuli in the Human Brain Dissertation Abstracts International; April, Vol. 68 no. 10, p.7013 B. S.A. Annie Isabella, Non (2010). "Academic Achievement of the B. Ed Student Teachers in relation to their Socio – Economic Status", Vol.10, No.3.

[2]. Ganzenmuller, Linda, Phy., D., (2006). Using relaxation to cue memeory and improve law school administration test scores. Dissertation Abstracts International, April, Vol. 67no. 10, p. 6087

[3]. B. LokeshKoul (2008). Methodology of Educational Research. Third Revised Edition .Vikas publishing house Pvt Ltd., Noida (U.P).

[4]. Pushpavalli A. (2010). Effect of Memory Enhancing Strategies on Chemistry Achievement among Engineering Students. Periyar University, Salem.

[5]. S.Akila&Dr.K.Vijayarani (April 2018)"Meta-Cognition and Academic Achievement of XI STD Students",Research Demagogue, International Refereed, Indexed & peer Reviewed Bi-Annual Journal in Education, Page no:9-11.

[6]. Dr.K.Vijayarani(Jan2019-1)"Innovative Teaching Methods", International Journal of Applied Science and Computations. Vol no 6, Issue 1, Page no:2562-2566.

[7]. S.Akila&Dr.K.Vijayarani(Sep 2017) "The Role of Meta cognition in Teaching Science, Peer Reviewed Journal, Sri Sarada Journal of Frontiers of KnowledgeVolume-VI Issue-III, Page no 22-25.

[8]. Ishak, Ismarul , et al. (2012). The Study of Working Memory and Academic Performance of Faculty of Health Sciences Students. Procedia - Social and Behavioral Sciences. 60. 10.1016/j.sbspro.2012.09.428.

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