Research Paper

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THE EFFECT OF BRAIN-BASED LEARNING STRATEGY ON ACHIEVEMENT IN BIOLOGY OF IX STANDARD STUDENTS

Education

KEYWORDS : Brain-Based Learning Strategies, Achievement

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ABSTRACT

The purpose of this study is to examine the 'Effect of Brain-Based Learning Strategy on Achievement in Biology of IX Standard Students'. Participants are 50 students from a Government aided school in Coimbatore, 25 as control group and 25 as experimental group. Both groups were measured and compared at the end of the sessions. It can be concluded from the present study Brain-Based Learning strategy is more effective in the experimental group and had higher scores than the conventional method after analyzing and measuring t-test as the statistical measurement.

Introduction

Brain-based learning is a constructive, domain specific strategy to holistic education. This learning theory is based on the structure and function of the brain. As long as the brain is not prohibited from fulfilling its normal processes, learning will occur. Each learner has a different process and may not proceed linearly through the teaching learning proces. In the arena of classroom, the miracle of teaching happens through teaching methodologies. Only an effective teaching methodology can improve the cognitive domain of students considering the emotional and social behaviour. Such a strong teaching methodology sharing a social environment can be ensured through Brain-based learning.

Brain-based learning is an effective teaching technique that represents abstract or complex content matter in to simple and meaningful scaffolds and it has the potential to delay the learning platue since it provides great scope for interaction among and between students and teachers. Brain based learning is all about: knowing how our brain works, then using that to foster better student outcomes" (Eric Jensen, 2014). This innovative teaching strategy will open up new vistas to discover the undiscovered facts about the subject matter and students, makes learning more enjoyable and ongoing.

Purpose of the Study

The purpose of this study was to determine the effect of Brain-Based Learning strategy on achievement in biology of IX standard students.

Objectives of the Study:

The present study has been undertaken with the following specific objectives:

To study the effect of Brain Based Learning Strategy for enhancing achievement of IX standard students.

To study the level of 'Achievement' by applying Brain Based Learning Strategy for IX Standard students with regard to gender.

Hypotheses of the Study

The present study has formulated the following null hypotheses:

- There is no significant effect of Brain Based Learning Strategy for enhancing achievement of IX standard students.
- There exists no difference between boys and girls on their achievement by applying Brain Based Learning Strategy.

METHODOLOGY

Design of the study

Quasi-Experimental design was employed with the pre-test, post test non equivalent group design type was used in the study, viz.

O1 X O2
O3 C O4

Here, O1 and O3 are the pre-test scores; O2 and O4 are the post-test scores. X and C denote the experimental and control groups respectively.

Variables

The independent variable of the study is Brain Based Learning Strategy. The dependent variable of the study is Achievement in Biology. The gender was treated as the classificatory variables for the study.

Sample

The study was carried out on a purposive sample of 50 students from two intact IX standard classes of a Government Aided school in Coimbatore giving due representation to gender. They were divided into two groups, control group and experimental group, each group consists of 25 students.

Tools

The following tool was used in the study: Achievement Test in Biology (Preapared and standardised by the investigator).

Analysis and Interpreatation of Data

Comparison of mean pre tests scores of experimental and control group.

Before starting the experiment an achievement test was administered as pre test to both experimental and control groups. The scores obtained were compared and the data thus obtained were analyzed by computing the mean and standard deviation and subjected to test of significance of difference between the two means.

TABLE: 1 Test of significance of the difference between mean pre test scores of the experimental and control group

Group	N	Mean	SD	t
Experimental group (EG)	25	18.2	4.637	1.119^{NS}
Control group (CG)	25	16.8	4.193	

NS - Not Significant

The table 1 reveals that the pre-test scores on achievement of the experimental group (M= 18.2) and that for control group (M= 1.6.8). The t-ratio obtained (t=1.119) which is less than the

table value at 0.05 significance level. Hence it is not significant. This means that there is no significant difference between the pre test scores of experimental and control groups. Thus, proving the samples in the control group and experimental group are equal.

Comparison of mean post-test scores of experimental and control group.

The investigator attempted to compare the post test scores of the experimental and control group on the achievement of IX standard students by implementing Brain Based Learning Strategy. The scores of post tests of the experimental and control group were analyzed by computing the mean and standard deviation and subjected to test the significance of difference between two means.

TABLE: 2 Test of significance of difference between mean post test scores of the experimental group and control Group

Group	N	Mean	SD	T
Experimental group (EG)	25	26.16	4.819	6.107*
Control group (CG)	25	18.72	3.725	

*** Significant at 0.05 level**

The mean post-test scores on achievement for experimental group (M= 26.16) and that for control group (M= 18.72). The t-ratio obtained (t= 6.107) which is greater than the table value. Hence it is significant at 0.05 level and the null hypothesis was rejected. The difference in the mean academic scores indicates the effectiveness of the intervention. That means Brain Based Learning Strategy have a significant effect on achievement of IX standard students.

Comparison of pre test and post test scores of achievement of experimental and control group

The investigator attempted to compare the pre test and post test scores of the experimental group and control group in order to find out the effectiveness of Brain Based Learning Strategy for enhancing achievement of IX standard students.

A pre test was administered before the treatment. Brain Based Learning Strategy was implemented in the experimental group. After the treatment a post test was administered. The scores of the pre test and post test were analyzed by computing the mean and standard deviation and subjected to test the significance of difference between the scores.

TABLE: 3 Test of significance of the difference between mean pre test and post test scores of the experimental group

Group	Pre-test			Post-test		't' value
	No.	Mean	S.D	Mean	S.D	
Experimental group (EG)	25	18.2	4.637	26.16	4.819	5.951*
Control group (CG)	25	16.8	4.193	18.72	3.725	1.712

***Significant at 0.05 level Table value = 1.99**

The obtained 't' value is 5.951, which is greater than the table value at 0.05 significance level. This shows that there is significant difference between the mean scores of the pre test and post test of the experimental group in the achievement. Whereas in the control group the obtained 't' value is 1.712, which is less than the table value at 0.05 significance level. This shows that there is no significant difference between the mean scores of the pre test and post test of the control group in the achievement. That means Brain Based Learning Strategy have significant influence for enhancing achievement of IX standard students.

Comparison of mean post test scores of experimental group and control group with regard to gender.

The investigator attempted to compare the post test scores of the boys and girls in the experimental group and control group.

TABLE 4 Test of significance of difference between the post test scores of boys and girls in the experimental group and control group

Group	Variable	N	Mean	SD	T
Experimental group (EG)	Boys	13	28.84	4.72	3.59*
	Girls	12	23.25	2.93	
Control group (CG)	Boys	12	19.17	3.43	0.57^{NS}
	Girls	13	18.31	4.06	

*Significant at 0.05 level, NS -Not Significant

The 't' value 3.59 is greater than table value at 0.05 significance level. That means there is significant difference between the mean post test scores of boys and girls in the experimental group. Whereas in the control group, the 't' value is 0.57 which is less than table value at 0.05 significance level. That means there is no significant difference between the mean post test scores of boys and girls in the control group.

MAJOR FINDINGS OF THE STUDY

The Data, the investigator collected using the Achievement Test revealed that Brain Based Learning Strategy has considerable effect upon the IX standard students.

There is no significant difference in the pre test mean scores of the experimental and control group. That means the samples in the control group and experimental group are equal.

There is great difference in the post test mean scores of the experimental and control group.

There is significant difference between the mean scores of the pre test and post test of the experimental group in the achievement. Whereas in the control group no significant difference is noted between the mean scores of the pre test and post test.

There is significant difference between the mean post test scores of boys and girls in the experimental group. Whereas in the control group, no significant difference is noted between the mean post test scores with regard to gender.

The difference in the mean academic scores indicates the effectiveness of the intervention.

Conclusion

The study found that the Brain-Based Learning has got a significant effect in fostering achievement among the students. It provides scope for students to involve actively in learning making it more meaningful and enjoyable.This research study advocates a promising approach which can bring very constructive changes and emphasizes the importance of reframing the school curriculum which should be attuned to their brain characteristics and learning styles and thereby creating brain friendly learners who can take up the challenges of the future generation.

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