



EFFECTIVENESS OF BRAIN BASED LEARNING IN LEARNING BIOLOGICAL SCIENCE AMONG THE STUDENTS OF STANDARD IX

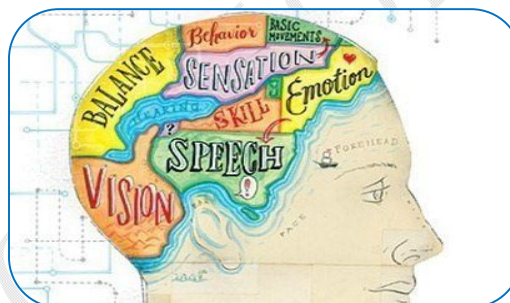
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ABSTRACT :

The aim of the current study was to examine the effectiveness of brain based learning in learning biological science among the students of standard IX. The equivalent group experimental method was adopted. A sample of 180 students was selected from three higher secondary schools. In the present study, brain based learning and traditional method used acts as independent variables, achievement score in biological science acts as a dependent variable. The effectiveness of learning biological science depends on three types of schools and the selected units of biological science from the textbook of Tamil Nadu. The significant difference between the means of each pair of group was computed using t-test and ANOVA. Result found that the effectiveness of brain based learning strategy is higher than the traditional method of teaching.



KEYWORDS : Brain Based Learning, Science, Achievement in Biological Science, IX Standard Students.

INTRODUCTION

Teaching methods comprises the principles and methods used by teachers to enable student learning. These strategies are determined partly on subject matter to be taught and partly by the nature of the learner for a particular teaching method to be appropriate. A teaching approach is a way of looking at teaching and learning. An approach gives rise to methods the way of teaching something which are used in classroom activities or techniques to help learners to learn. Brain based learning refers to teaching methods lesson designs and school programs that are based on the latest scientific research about how the brain learn including such factors as cognitive development how students learn differently as they age grow and mature socially emotionally and cognitively. Brain based learning is motivated by the general belief that learning can be accelerated and improved it. Educators base how and what they teach on the science of learning rather than on past educational practices established conventions or assumptions about the learning process. Brain based learning refer to instructional technique that are grounded in the neuroscience of learning education science refer to the general field of academic and scientific study not to the brain based practices employed in schools.

SIGNIFICANCE OF THE STUDY

The investigator strongly felt that an awareness of modern instructional strategy is essential for the development of students. Hence a holistic and multidisciplinary approach will increase the learning potential of every child. The review of related literature indicated that various studies conducted abroad showed that

the Brain-Based Learning had a positive effect on achievement. But in India only very few researches dealt with Brain-Based Learning. The investigator was curious to know whether brain-based learning has the same impact on achievement in India also. Studies conducted on creativity dealt with variables such as academic achievement, achievement motivation, critical thinking, communication skills, personality and adjustment. But the investigator did not come across any study dealt with brain-based learning and learning biological science. The investigator was of the impression that the brain based learning will impart better student achievement. Therefore the investigator undertook the problem of evaluating the effectiveness of brain based learning on learning biological science among the students of standard IX.

OBJECTIVES

- To find out whether there is any significant difference in achievement mean score of the students between the pre- test of Experimental group and the post- test of experimental group.
- To see if there is any huge distinction in accomplishment mean score of the understudies between the post-trial of control gathering and the post-trial of trial gathering.
- To see if there is any noteworthy contrast in accomplishment mean score of the understudies between the pre-trial of exploratory gathering and the post-trial of test bunch as for (an) administration (b) government helped and (c) registration.
- To find out whether there is any significant difference in achievement mean score of the students between the pre-test of experimental group and the post-test of experimental group in matriculation school with respect to (a) Classification of living organism (b) Criteria for classification (c) Phylum Protozoa to Annelida (d) Arthropoda to Echinodermata (e) Chordata.
- To find out whether there is any significant difference in achievement mean score of the students between the post-test of experimental group and the retention test with respect to (a) government school (b) government school and (c) matriculation school.

HYPOTHESES

1. There is no significant difference in achievement mean score of the students between the pre- test of experimental group and the post-test of experimental group.
2. There is no noteworthy contrast in accomplishment mean score of the understudies between the post-trial of control gathering and the post-trial of trial gathering.
3. There is no noteworthy contrast in accomplishment mean score of the understudies between the pre-trial of test gathering and the post-trial of trial aggregate concerning (an) administration (b) government supported and (c) registration.
4. There is no significant difference in achievement mean score of the students between the pre-test of experimental group and the post-test of experimental group in matriculation school with respect to (a) Classification of living organism (b) Criteria for classification (c) Phylum Protozoa to Annelida (d) Arthropoda to Echinodermata (e) Chordata.
5. There is no significant difference in achievement mean score of the students between the post-test of experimental group and the retention test with respect to (a) government school (b) government school and (c) matriculation school.

METHOD

For this study, the equivalent group experimental method was used. The investigator selected three types of higher secondary schools for conducting the study. 180 students were selected from government, aided and private higher secondary schools in equal strength of both control groups and experimental groups in the study. Four researcher-made tools were used in the study. The first tool was interview schedule to the teachers. Second was achievement test which is used for testing the effectiveness of Brain Based Learning in Learning Biological science among the students its reliability point is 0.76. The third tool

was retention test which was used to find out the retention of Brain Based Learning in learning Biological science its reliability point is 0.75 and the fourth tool was Case study which used to find out the Impact of Brain Based Learning in learning Biological science.

DEVELOPMENT OF BBL CLASSROOM

Students motivated through pre exposure to the topics. Students were introduced brain stimulating activity through physical and cognitive level. Students were experienced with multi sensory exposure through multimedia. Through transformation builds repetition of concepts, better understanding of the concept and develop emotional connectivity towards the topics learned. 1) Pre Exposure, 2) Preparation, 3) Initiation and Acquisition, 4) Elaboration 5) Incubation and Memory Coding, 6) Verification and Confidence check, 7) Celebration and Integration. Based on these stages lesson plans were prepared and activities were included.

ANALYSIS OF DATA

Table 1: Mean Difference between Pre-Test of Experimental Groups and the Post-Test of Experimental Groups

Tests	N	Mean	SD	t-value	Remark
Pre-Test Experimental Group	90	11.16	1.74	14.09	Significant
Post-Test Experimental Group	90	13.98	1.90		

From Table-1, the calculated t-value 14.09 is higher than the table value 1.96 at 0.05 level. Hence the hypothesis-1 is rejected. Consequently there is noteworthy distinction in accomplishment mean score of the understudies between the pre-trial of test gathering and the post-trial of exploratory gathering. It substantiates that brain based learning is more effective for scoring more marks in biological science. Students of three schools scored the higher marks through TBL than traditional methods.

Table 2: Mean Difference between Post-Test of Control Groups and the Post-Test of Experimental Groups

Tests	N	Mean	SD	t-value	Remark
Post-Test Control Group	90	11.19	1.66	13.43	Significant
Post-Test Experimental Group	90	13.98	1.90		

From Table-2, the calculated t-value 13.43 is higher than the table value 1.96 at 0.05 level. Hence the hypothesis-2 is rejected. Hence there is critical contrast in accomplishment mean score of the understudies between the post-trial of control gathering and the post-trial of trial gathering. Students of three schools scored the higher marks through bbl than traditional methods. It substantiates that team based learning is more effective for scoring more marks in biological science.

Table 3: Mean Difference between Pre-Test of Experimental Group and the Post-Test of Experimental Group with respect to (A) Government (B) Government Aided and (C) Matriculation

S.No.	Type of School	Tests	N	Mean	SD	t-value	Remark
3(i)	Government	Pre-Test Experimental Group	30	11	1.83	9.60	Significant
		Post-Test Experimental Group	30	14.37	2.04		
3(ii)	Aided	Pre-Test Experimental Group	30	11.47	1.59	7.47	Significant
		Post-Test Experimental Group	30	13.57	1.73		
3(iii)	Matriculation	Pre-Test Experimental Group	30	11	1.81	8.07	Significant
		Post-Experimental Control Group	30	14	1.91		

Table-3 shows that the calculated t-values for 3(i), 3(ii) and 3(iii) are 9.60, 7.47 and 8.07 respectively

are higher than the table value 2.00 at 0.05 level. Hence the hypothesis-3 is rejected. Thus there is significant difference in achievement mean score of the students between the pre-test of experimental group and the post-test of experimental group with respect to the schools of (a) Government (b) Aided and (c) Matriculation. In the individual mean scores of each school varied in the mean value. mean score of the students between the pre-test of experimental group and the post-test of experimental group with respect to the schools of (a) Government (b) Aided and (c) Matriculation are 9.60, 7.47 and 8.07. Government school had better than Matriculation, Matriculation is better than Aided school but Aided is lower in mean score.

Table 4: Pre-Test of Experimental Group and the Post-Test of Experimental Group in Matriculation School with respect to (A) Classification of Living Organism (B) Criteria for Classification (C) Phylum Protozoa to Annelida (D) Arthropoda to Echinodermata and (E) Chordata

S.No.	Type of School	Dimension	Type of School	N	Mean	SD	t-value	Remark
4(i)	MATRICULATION SCHOOL	Classification of living organism	Pre-Test Experimental Groups	90	2.27	0.69	2.81	Significant
			Post-Test Experimental Groups	90	2.77	0.89		
4(ii)		Criteria for classification	Pre-Test Experimental Groups	90	2.33	0.88	2.37	Significant
			Post-Test Experimental Groups	90	2.80	0.88		
4(iii)		Phylum Protozoa to Annelida	Pre-Test Experimental Groups	90	1.37	0.49	4.18	Significant
			Post-Test Experimental Groups	90	2.07	0.86		
4(iv)		Arthropoda to Echinidermata	Pre-Test Experimental Groups	90	2.43	0.77	3.73	Significant
			Post-Test Experimental Groups	90	3.07	0.86		
4(v)		Chordata	Pre-Test Experimental Groups	90	2.60	0.85	3.75	Significant
			Post-Test Experimental Groups	90	3.30	0.87		

From Table-4, the calculated t-values for 4(i), 4(ii), 4(iii), 4(iv) and 4(v) are 2.81, 2.37, 4.18, 3.73 and 3.75 respectively are greater than the table value 2.04 at 0.05 level. Hence the hypothesis-4 is rejected. Thus there is significant difference in achievement mean score of the students between the pre-test of experimental group and the post-test of experimental group in matriculation school with respect to (a) Classification of living organism (b) Criteria for classification (c) Phylum Protozoa to Annelida (d) Arthropoda to Echinidermata and (e) Chordata

Table 5: Mean Difference between the Post-Test of Experimental Group and the Retention Test with respect to (A) Government School (B) Government School and (C) Matriculation School

S.No.	Type of School	Tests	N	Mean	SD	t-value	Remark
5(i)	Government	Post – Test Experimental Group	90	14.37	2.04	4.53	Significant
		Retention Test	90	14.97	2.07		
5(ii)	Aided	Post – Test Experimental Group	90	13.57	1.73	6.86	Significant
		Retention Test	90	16.30	2.05		
5(iii)	Matriculation	Post – Test Experimental Group	90	14	1.91	4.24	Significant
		Retention Test	90	14.63	2.02		

From Table-5, the calculated t-values for 5(i), 5(ii) and 5(iii) are 4.53, 6.86 and 4.28 respectively are greater than the table value 2.00 at 0.05 level. Hence the hypothesis-5 rejected. Thus there is significant difference in achievement mean score of the students between the post-test of experimental group and retention test with respect to (a) government school (b) aided school and (c) matriculation school. It substantiates that brain based learning is retained long in three schools.

FINDINGS

- The calculated t-value 14.09 is higher than the table value 2.00 at 0.05 level. It demonstrates that there is noteworthy distinction in accomplishment mean score of the understudies between the pre-trial of trial gatherings and the post-trial of test gatherings.
- The calculated t-value 13.43 is higher than the table value 2.00 at 0.05 level. It uncovers that there is noteworthy distinction in accomplishment mean score of the understudies between the post-trial of control gatherings and the post-trial of trial gatherings.
- The calculated t-values for 3(i), 3(ii) and 3(iii) are 9.60, 7.47 and 8.07 respectively is higher than the table value 2.00 at 0.05 level it shows that there is a significant difference in achievement mean score of the students between the pre-test of experimental group and the post-test of experimental group with respect to the schools of (a) government (b) aided and (c) matriculation.
- The calculated t-values for 4(i), 4(ii), 4(iii), 4(iv) and 4(v) are 2.81, 2.37, 4.18, 3.73 and 3.75 respectively is greater than the table value 2.04 at 0.05 level it express that there is a significant difference in achievement mean score of the students between the pre-test of experimental group and the post- test of experimental group in government school with respect to (a) classification of living organism (b) criteria for classification (c) phylum protozoa to annelida (d) arthropoda to echinodermata and (e) chordata.
- The calculated t-values for 5(i), 5(ii) and 5(iii) are 4.53, 6.86 and 4.28 respectively is greater than the table value 2.00 at 0.05 level. It shows that there is significant difference in achievement mean score of the students between the post-test of experimental group and retention test with respect to a) government b) government aided c) matriculation school.

RECOMMENDATIONS

Based on the findings of the study the following recommendations are suggested by the investigator, Brain is an important organ of learning, through some brain based leaning strategies can make the learning easier and more understandable. Teacher should be aware about the physiological importance of brain in the leaning processes. The present study likes to establish the effectiveness of brain based learning is higher than the conventional teaching strategy.

CONCLUSION

The study substantiates that brain based learning is more effective than conventional methods in learning biological science. Brain based Learning accelerates the learners in way of happy incidents in

learning Biological science. BBL reduces the learning impediments of the students through social incorporated peer mixed learning. In this learning, teachers are facilitators instead of teaching and coaching the subjects. It is a learner-centered method to acquire the necessary competency in the subject. The study may be useful to enhance competency of all types of learners in different levels.

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