

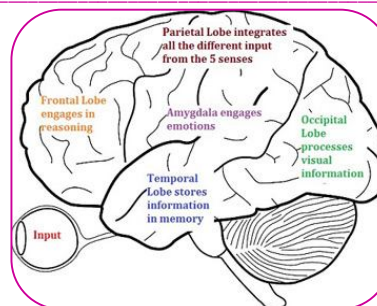


EFFECTIVENESS OF BRAIN BASED TEACHING APPROACH IN ENHANCING PHYSICS LEARNING AMONG THE STUDENTS OF STANDARD VIII

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ABSTRACT:

Brain based teaching approach and representations could help students' better understanding of concepts while being particularly well suited for addressing the Standards: problem solving, reasoning and making connections. Students Brain based teaching will help them to perceive dynamically important role in their environment, they should explore and investigate problems in effective way, make and test conjectures, construct and use models, drawings, and computer technology, use inductive and deductive reasoning, and communicate their results with confidence and conviction.

KEYWORDS : Brain based Teaching, Standard VIII Students.

INTRODUCTION

The knowledge about brain function and its effects on teaching have the potential to revolutionize teaching and learning. Brain-based teaching has resulted from educators and researchers applying the findings of brain research to guide teaching practice. This requires instructors to understand how the brain works and how to design instruction with that information in mind (Stevens & Goldberg, 2001). To be able to do so, it is essential that teachers have the knowledge about the basics of brain based teaching and what do they feel about it. Brain-Based Teaching Approach (BBTA) is one such learner-centered and teacher facilitated approach that utilizes learner's cognitive endowments. It is based on the brain-based learning principles in the traditional method of teaching. Students are made to rush through a basic curriculum designed for them with homogenous learning styles without consideration of a typical learning style. This leads to boredom, underachievement and discipline problems.

NEED AND SIGNIFICANCE OF THE STUDY

The investigator while working in a school as a teacher realized that the present learning strategy focused more on getting marks in the exams. The students became frustrated and found school work difficult because they did not have enough cognitive skills required to process information properly. It is impossible to reach every student in the classroom by using only one instructional strategy (Eggen and Kauchak, 2001). 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 Teaching had a positive effect on achievement. But in India only very few researches dealt with Brain-Based Teaching. The investigator was curious to know whether Brain-Based Teaching has the same impact on achievement in India also. Therefore the investigator undertook the

problem of evaluating the Effectiveness of Brain - Based Teaching approach in enhancing Physics Learning among the students of standard VIII.

OBJECTIVES OF THE STUDY

- To find out whether there is any significant difference in achievement mean score of the students between the pre-test of control group and the post-test of control group with respect to (a) contact force (b) electrostatic force (c) gravitational force (d) magnetic force and (e) muscular force.
- 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 with respect to (a) contact force (b) electrostatic force (c) gravitational force (d) magnetic force and (e) muscular force.
- To find out whether there is any significant difference in achievement mean score of the students between the post-test of control groups and the post-test of experimental groups with respect to (a) contact force (b) electrostatic force (c) gravitational force (d) magnetic force and (e) muscular force.
- To find out whether there is any significant difference in achievement mean score of the students between the pre-test of control groups and the pre-test of experimental groups with respect to (a) contact force (b) electrostatic force (c) gravitational force (d) magnetic force and (e) muscular force.

HYPOTHESES

1. There is no significant difference in achievement mean score of the students between the pre-test of control group and the post-test of control group with respect to (a) contact force (b) electrostatic force (c) gravitational force (d) magnetic force and (e) muscular force.
2. 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 with respect to (a) contact force (b) electrostatic force (c) gravitational force (d) magnetic force and (e) muscular force.
3. There is no significant difference in achievement mean score of the students between the post-test of control groups and the post-test of experimental groups with respect to (a) contact force (b) electrostatic force (c) gravitational force (d) magnetic force and (e) muscular force.
4. There is no significant difference in achievement mean score of the students between the Pre-test of control groups and the pre-test of experimental groups with respect to (a) contact force (b) electrostatic force (c) gravitational force (d) magnetic force and (e) muscular force.

RESEARCH METHOD AND SAMPLE

Experimental method was used for the study. A sample of 180 students was selected from 3 secondary schools in Coimbatore by using random sampling technique. 60 students were selected from each secondary school.

TOOL

The investigator constructed an achievement test. Experts of the physics subject were consulted and as per the opinion of the experts some of the concepts were deleted and modified. The agreement of the views expressed by the experts after the logical evaluation of the test questions was taken as the validity of the tool. The investigator conducted a pilot study. The achievement test containing 30 objective type questions was administered to 15 eighth standard students who were not included in the sample of the study. The tool was subjected to item analysis by calculating difficulty level and discriminating power. The reliability was established by the split half method and reliability coefficient was found to be 0.86 which depicted the reliability of the tool. The final form of the achievement test containing 25 objective type questions was used as an achievement test in after the treatment of the both groups.

DATA ANALYSIS**Table 1: Pre-Test of Control Group and Post-Test of Control Group with respect to (A) Contact Force (B) Electrostatic Force (C) Gravitational Force (D) Magnetic Force and (E) Muscular Force**

S.No.	Dimension	Test	N	Mean	SD	t-value	Remark
1(i)	Contact Force	Pre-test control group	90	2.30	0.67	0.49	Not Significant
		Post-test control group	90	2.32	0.59		
1(ii)	Electrostatic Force	Pre-test control group	90	2.41	0.70	0.55	Not Significant
		Post-test control group	90	2.44	0.62		
1(iii)	Gravitational Force	Pre-test control group	90	1.54	0.56	0.30	Not Significant
		Post-test control group	90	1.56	0.60		
1(iv)	Magnetic Force	Pre-test control group	90	2.41	0.84	0.13	Not Significant
		Post-test control group	90	2.42	0.83		
1(v)	Muscular Force	Pre-test control group	90	2.50	0.79	1.11	Not Significant
		Post-test control group	90	2.38	0.94		

From Table-1, the calculated t-values for 1(i) Contact Force, 1(ii) Electrostatic Force, 1(iii) Gravitational Force, 1(iv) Magnetic Force and 1(v) Muscular Force are 0.49, 0.55, 0.30, 0.13 and 1.11 respectively is less than the table value 1.96 at 0.05 level. Hence the hypothesis-1 accepted at 0.05 level.

Table 2: Pre-Test of Experimental Group and Post-Test of Experimental Group with respect to (A) Contact Force (B) Electrostatic Force (C) Gravitational Force (D) Magnetic Force and (E) Muscular Force

S.No.	Dimension	Test	N	Mean	SD	t-value	Remark
2(i)	Contact Force	Pre-test Experimental group	90	2.32	0.66	7.88	Significant

		Post-test Experimental group	90	3.14	0.96		
2(ii)	Electrostatic Force	Pre-test Experimental group	90	2.41	0.77	3.17	Significant
		Post-test control group	90	2.70	0.80		
2(iii)	Gravitational Force	Pre-test Experimental group	90	1.52	0.54	5.56	Significant
		Post-test Experimental group	90	2.04	0.87		
2(iv)	Magnetic Force	Pre-test Experimental group	90	2.39	0.73	6.86	Significant
		Post-test Experimental group	90	3.03	0.81		
2(v)	Muscular Force	Pre-test Experimental group	90	2.51	0.78	5.50	Significant
		Post-test Experimental group	90	3.06	0.87		

From Table-2, the calculated t-values for 2(i) Contact Force, 2(ii) Electrostatic Force, 2(iii) Gravitational Force, 2(iv) Magnetic Force, and 2(v) Muscular Force are 7.88, 3.17, 5.56, 6.86, and 5.50 respectively is greater than the table value 2.58 at 0.01 level. Hence, the hypothesis-2 is rejected.

Table 3: Post-Test of Control Group and Post-Test of Experimental Group with respect to (A) Contact Force (B) Electrostatic Force (C) Gravitational Force (D) Magnetic Force and (E) Muscular Force

S.No.	Dimension	Test	N	Mean	SD	t-value	Remark
3(i)	Contact Force	Post-test control group	90	2.39	0.66	7.26	Significant
		Post-test Experimental group	90	3.14	0.96		
3(ii)	Electrostatic Force	Post-test control group	90	2.44	0.77	2.87	Significant
		Post-test Experimental group	90	2.70	0.80		
3(iii)	Gravitational Force	Post-test control group	90	1.56	0.54	4.93	Significant
		Post-test Experimental group	90	2.04	0.87		

3(iv)	Magnetic Force	Post-test control group	90	2.42	0.73	5.37	Significant
		Post-test Experimental group	90	3.03	0.81		
3(v)	Muscular Force	Post-test control group	90	2.38	0.78	8.13	Significant
		Post-test Experimental group	90	3.06	0.87		

From Table-3, the calculated t-values for 3(i) Contact Force, 3(ii) Electrostatic Force, 3(iii) Gravitational Force, 3(iv) Magnetic Force and 3(v) Muscular Force are 7.26, 2.87, 4.93, 5.37 and 8.13 respectively is greater than the table value 2.58 at 0.01 level. Hence the hypothesis-3 is rejected.

Table 4: Pre-Test of Control Group and Pre-Test of Experimental Groups with respect to (A) Contact Force (B) Electrostatic Force (C) Gravitational Force (D) Magnetic Force and (E) Muscular Force

S.No.	Dimension	Test	N	Mean	SD	t-value	Remark
4(i)	Contact Force	Pre-test control group	90	2.30	0.67	1.42	Not Significant
		Post-test control group	90	2.32	0.59		
4(ii)	Electrostatic Force	Pre-test control group	9	2.41	0.70	0.01	Not Significant
		Post-test control group	90	2.44	0.62		
4(iii)	Gravitational Force	Pre-test control group	90	1.54	0.56	1.42	Not Significant
		Post-test control group	90	1.56	0.60		
4(iv)	Magnetic Force	Pre-test control group	90	2.41	0.84	0.37	Not Significant
		Post-test control group	90	2.42	0.83		
4(v)	Muscular Force	Pre-test control group	90	2.50	0.79	0.57	Not Significant
		Post-test control group	90	2.38	0.94		

From Table-4, the calculated t-values for 4(i) Contact Force, 4(ii) Electrostatic Force, 4(iii)

Gravitational Force, 4(iv) Magnetic Force and 4(v) Muscular Force are 1.42, 0.01, 1.42, 0.37 and 0.57 respectively is less than the table value 1.96 at 0.05 level. Hence the hypothesis-4 accepted.

CONCLUSION

The purpose of education, one might argue, is to teach children to become more efficient thinkers, making smart social, emotional, and academic decisions (Brown, 2012). The role of the teacher, then, is to facilitate and encourage this process of learning. To meet the challenge, educators must have a state-of-the-art understanding of how the brain functions and people learn (Caine & Caine, 1997). The brain is involved with everything we do at school, and educators who understand take this fact into consideration in the decision-making process (Jensen, 2008). The brain is the only organ in the body that sculpts itself from its interactions with its environment (Wolfe, 2006). The human brain differs from the brains of other species. The human brain has a larger cognitive area and the ability to use it for high-order thinking (Sylwester, 1997). This ability to think critically is highly important when students come to school.

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