

## Brain Based Teaching Approach – A New Paradigm of Teaching

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**Abstract:** *The aim of the study is to investigate the impact of brain-based teaching approach (BBTA) on the academic achievement of the secondary school students in relation to their issues related to stress. The study adopted quasi-experimental design. The sample constitutes 87 secondary school students of a private aided school in Bangalore city. The sample was grouped statistically into experimental group and control group. The researcher taught the experimental group whereas the control group by the class teacher. The researcher based on the three techniques of BBTA taught the lessons: techniques are namely Relaxed Alertness (RA), Orchestrated Immersion (OI) and Active Processing (AP). t test was used to test the null hypotheses at 0.05 level of significance. The purpose of the study was to determine: (a) difference between the academic scores of experimental group and control group, (b) any difference exist among boys and girls with respect to their academic scores, (c) the impact of BBTA on the stress of students. The findings revealed significant difference in the mean scores of the experimental and control group. It showed that BBTA had better impact in the academic achievement of the students. The result of the comparison of boys and girls on their academic scores showed that girls possessed higher mean scores than the boys. The impact of BBTA on the stress of the students was also measured. The pre and posttest scores were analysed. It revealed that BBTA helped the students to reduce their stress level. The findings led to the conclusion that the brain based teaching approach used in the experimental group gave better impact on their academic achievement and in reducing the stress level of the students.*

**Key Words:** *Brain Based Teaching Approach, Relaxed Alertness, Orchestrated Immersion, Active Processing, Academic Achievement.*

### I. INTRODUCTION

Our education era has put forward new theories and approaches to eliminate the limitation of the traditional way of learning and to improve the quality of instruction. Constructivism, multiple intelligence, active learning, inquiry-based learning, problem-based learning, project-based learning etc. are some of the new approaches. The biggest challenge our country facing today in the field of education is not only education expansion and universalisation of education but to improve the quality of education. To overcome this major challenge, teachers play a vital role. Teachers should plan for a new innovative step where they can promote the quality of 21st century learning. Students' active participation in the teaching learning process is another factor for the improvement of the quality of education. For this, we should apply those techniques in our teaching learning process which create interest among the pupil. In other words, the process should be pupil centered rather than teacher centered. 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. To overcome this difficult problem, experts are making use of nontraditional pedagogical approaches such as brain-based teaching to address the needs of these students. (Respress and

Lutfi 2006) Unlike traditional methods of schooling, which is often said to inhibit learning by ignoring the brain's natural learning processes, the Brain-Based teaching approach (BBTA) is believed to boost learning due to its holistic approach towards the learners. "It is an approach of learning which favors the brain's best natural operational principles, with the goal of attaining maximum attention, understanding, meaning, and memory". (Jenson, 1996)

Meaningful learning occurs when faculty transmit from a teacher-centered environment to one that is learner-centered. To become learner-centered, educators must develop students' understanding of course content by enriching the classroom environment to include physical, emotional, and social aspects, while adjusting the local point of the classroom from teaching to learning. (Eric K. Kaufman, J. Shane Robinson, Kimberly A Bellah, Cindy Akers, Penny Haase-Wilter, Lynn Martindale 2008)

Brain-based teaching approach integrates the engagement of emotions, enriched environments, music, movement, meaning making and the absence of threat for maximum learner participation and achievement (Sousa 2004) BBL sometimes called Brain-Compatible learning is an educational approach based on what current research in neuroscience suggests about how our brain naturally learn best. The learning strategy derived from this research can easily be integrated into any learning environment, from a kinder garden classroom to a seminar for adult (Luna 2004). Understanding how the brain learns and relating it to the educational field resulted in the concept known as brain-based learning. It is defined as any teaching technique or

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strategy that utilizes information about the human brain to organize how lessons are constructed and facilitated with emphasis placed on how the brain learns naturally.

### The Brain Based Teaching Approach

The Brain Based Teaching Approach is a strategy implemented based on the Brain Based Learning Principles developed by Caine & Caine (1991, 2003) via three instructional techniques, relaxed alertness, orchestrated immersion, and active processing associated with these principles.

Caine and Caine (1991) have pointed out that “brain research establishes and confirms that multiple complex and concrete experiences and essential for meaningful learning and teaching” (p.5). Based on their research and experience, further, they argued that great teaching involves three fundamental elements, namely:

1. *Relaxed Alertness*: Trying to eliminate fear in learners.
2. *Orchestrated Immersion*: Creating learning environments that fully immerse students in an educational experience.
3. *Active Processing*: Allowing the learner to consolidate and internalize information by actively processing it.

Specifically based on conclusions from research in neuroscience, professors from major universities have taken this information and incorporated it into books about learning. In accordance with these suggestions classroom practices can be modified by teachers, applying new theories of teaching and learning based on recent findings. Some noted authors of this area are John T. Bruer, (1997); Howard Gardner, (1983); Leslie A. Hart, (1983); Renne and Geoffery Caine. (1990); Sousa, (2004); Ryan&Abbot, (1999); Jensen, (1998); Hileman, (2006)

The past two decades have provided extraordinary progress in our understanding of the nature of learning. Never before have neuroscience and classroom instruction been so closely linked. Willis & Judy (2007) in the article “Brain-based teaching strategy for improving students’ memory, learning, and test taking success” discussed and found several brain-based strategies to improve memory, learning, and test taking success.

Salmiza (2011) did a qualitative study to find out the effect of the brain-based teaching approach (BBTA) in generating students’ learning motivation towards the subject of Physics with the secondary students of Malaysia. The findings of the study showed that the BBTA module was an effective teaching approach in dealing with the issue aforementioned. It was found that students who followed the BBTA module possessed a better physics learning motivation compared to students who received conventional teaching method.

## II. NEED FOR THE STUDY

Brain-based learning focus on how brain learns. It includes accepting the rules of brain processing and organizing the teaching according to these rules in the mind for meaningful learning. It provides us to think at the stage of making decision. Whereas, the traditional learning is challenged in many quarters, but alternative theories are still fragmented

and limited to supporting specific approaches such as thematic instruction, cooperative learning, meaning centered curriculum, and so on. By contrast, brain-based teaching and learning takes a holistic approach, looking at teaching developmentally, socio culturally and in other broad ways. There by the purpose of the study is to determine the impact of the teaching process based on the techniques of brain-based learning with traditional method. Using brain-based approach educators have succeed in improving the academic achievement of the students in subjects like Physics, Science, Social Science, Literature and Mathematics. It is revealed in the study of Salmiza (2011), Ozden & Gultekin (2008), Meredith (2011) and Awlola (2011). Though many studies concentrated on the academic performance of the students, the investigator found that there are certain limitation in the area of these studies. Along with the academic performance of the students, other variables related to their socio-psychological areas can also be touched. However, some studies were conducted, Indian studies found to be less. This gave the investigator the insight of conducting the study from the area of BBTA with the focus of certain psychological variables. Hence, brain-based approach will aid the teacher to create a learning environment for the students where the students will have a joyous experience of learning.

## III. OBJECTIVES OF THE STUDY

1. To find out the impact of BBTA on the academic achievement of students.
2. To find out whether any difference exist among boys and girls with respect to their academic scores.
3. To find out whether there exist any difference with the stress of students who are exposed to BBTA.

## IV. PROCEDURE OF THE STUDY

The researcher has used experimental design in the study. The sample consists of 87 secondary school students of a private aided school. The sample was grouped statistically into experimental group and control group. The researcher has considered 43 students under experimental group and 43 under control group. The experimental group was treated with BBTA module whereas the control group by the respective English teacher. The investigator has taken 31 classes out of which 26 lessons were taught. Daily assessment tests were taken at the end session of each class. A positive learning environment was created with charts hung with positive words written on it. Each class began with some breathing exercises and later music was played to reduce the stress and boredom in the class. This led to a healthy interaction with pupil. After completion of the content a chart with main points of the content was displayed. Unit tests were conducted for both the group after the completion of each unit. For the present study, test scores of only two units are considered. A pre and posttest of the stress level was also analysed.

## V. ANALYSIS AND FINDINGS:

The analysis of the study examines the comparison of experimental and control group with respect to their

academic achievement. The analysis was based on the quantitative data. With the help of SPSS software, t - test was used to compare the mean scores of two groups.

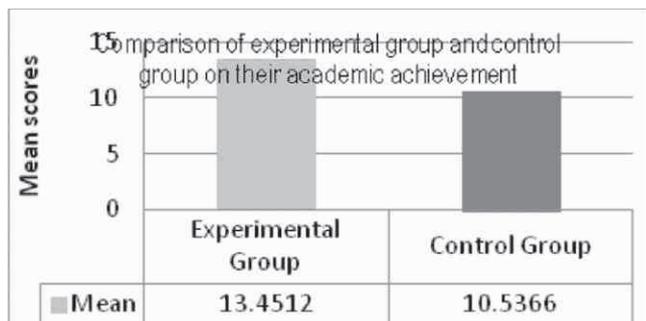
**Hypothesis 1: There is no difference in the academic achievement of experimental group and control group.**

**TABLE - 1 Comparison between Experimental group and Control group on their academic achievement**

BBTA	N	Mean	Standard Deviation	't' value	'p' value	Level of Significance
Experimental Group	41	13.4512	3.46555	4.417	.000	S
Control Group	41	10.5366	2.41710			

S -Significant 't' value at 0.01 = 3.416

From the above table it is evident that obtained 't' value is greater than the table value. While observing the 'p' value it makes clear that the value is less than 0.005. This indicates that there is a significant difference between the experimental and control group with respect to their academic achievement. Hence, the null hypothesis is rejected and the alternative hypothesis is accepted. The following graph shows the mean scores of both groups.



**Hypothesis 2: There is no difference among boys and girls with respect to their academic achievement.**

**TABLE – 2 Comparison between boys and girls with respect to their academic achievement**

GENDER	N	Mean	Standard Deviation	't' value	'p' value	Level of Significance
Male	33	12.6970	3.23540	-3.125	.003	S
Female	8	16.5625	2.65165			

S - Significant t - value at 0.05= 1.990

Table 2 illustrates the comparison of boys and girls of experimental group with respective to their academic achievement. The result shows that 'p' value is less than 0.005 and there is a significant difference in the mean scores of boys and girls. Hence, null hypothesis is rejected and alternative hypothesis is accepted. Though the number of girls is less, the mean value of their academic achievement is more.

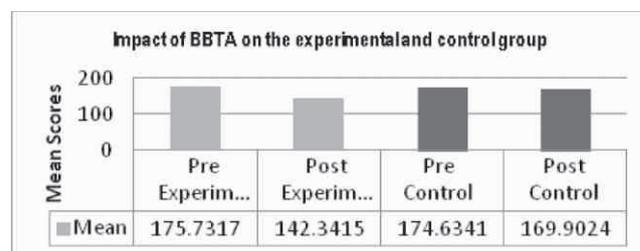
**Hypothesis 3: There is no impact of BBTA on stress of the students.**

**TABLE- 3 Impact of BBTA on the Stress of the Students**

BBTA	N	Mean	Standard Deviation	't' value	'p' value	Level of Significance
Pre Experimental	41	175.7317	20.05620	9.517	.000	S
Post Experimental	41	142.3415	15.65984			
Pre Control	41	174.6341	20.835403	1.070	.291	NS
Post Control	41	169.9024	21.30235			

S - Significant NS - Not Significant table value - 3.551

The table depicts the stress level of students in the experimental and control group. While analysing the experimental group, the scores indicates that students who are treated with stress free approach showed less mean scores. 'p' value is less than 0.005. Hence, there is a significant in the mean score. Whereas the analysis of pre and post stress level of students in control group showed no significant difference as they were not given any treatment. Thus, one can note the stress level of the students.



**VI. FINDINGS**

The findings that have emerged from the study are as follows:

There is a significant difference between the experimental and control group of students with respect of their academic achievement.

1. The study revealed that there is significant difference between boys and girls in their academic achievement. Girls had high mean scores when compared to the boys.
2. BBTA has impact in reducing the stress level of the students.

**VII. CONCLUSION:**

The study reveals that there existed a positive impact on BBTA in the academic achievement of the secondary school students. This new approach provides a positive environment for the students to learn effectively which will result in boosting their academic achievement. Brain based teaching approach enhanced learning by enriching an emotional climate in the classroom. It is purely learner centered and teacher facilitator approach. This new approach helps to maintain good working relationship with teachers and students and making learning meaningful and a joyful experience.

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