

***A Study of Interactive Influence of Brain-Based Learning and Hemisphericity of Students of Standard VIII on their Academic Achievement in Biology, Study Habits and Stress***

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Brain-based learning is an interdisciplinary answer to the question of, “what is the most effective way of the brain’s learning mechanism?” (Jensen 1998). 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 teacher.

**Brain-based learning requires three interactive elements:**

Relaxed alertness, Immersion and Active processing.

**Relaxed alertness:** Learning environment should give possibility for taking safe risks to increase the learning at the highest level. Sense of safety that accepts a risk at suitable level is a part of being relaxed.

**Immersion:** It is the students’ focusing on the context. When the wholeness and connecting to each other are inevitable, the students have to use local memory systems to discover the context.

**Active Processing:** In active processing, teachers should work with the students purposefully because the students need to connect and innate the knowledge both meaningfully as a character and conceptually harmonious.

**The study includes the following variables which can be operationally defined as:**

**Academic Achievement:** refers to the total scores obtained by an individual as measured on the test constructed by the researcher in the selected topics from the subject of Biology of std. VIII.

**Study Habits:** For the purpose of the present study, study habits has been operationally defined as the tendency of a student to study when the opportunity of study is given and the way of studying in test taking skills, text book study, time management, nutritional aspects of the study, note taking skills, concentration and memory, analytical thinking and problem solving and vocabulary skills.

**Stress:** It is defined as a reaction to any event in which environmental demands, internal demands or both tax or exceeds the adaptive resources of a student.

**Aims of the Study**

The broad aim of the study was:

To ascertain the interactive influence of Brain-Based learning and Hemisphericity on Academic Achievement in biology, Stress among students and Study Habits of students.

## **Objectives of the Study**

- To develop an instructional package based on brain-based learning
- To analyze the hemispheric preferences of students of experimental and control groups.
- To compare experimental and control groups on pre-test scores of the following variables: Academic Achievement, Stress, Study Habits of students.
- To compare experimental and control groups on post-test scores of the following variables: Academic Achievement, Stress, Study Habits of students
- To ascertain the interactive influence of Brain-based learning and hemispheric preferences of the experimental group on the following variables: Academic Achievement, Stress, Study Habits of students

## **Hypotheses of the Study**

The hypotheses formulated in the study were:

- 1) There is no significant difference between experimental and control groups on pre-test scores of the following variables: Academic Achievement, Stress, and Study Habits of students
- 2) There is no significant difference between the experimental and control groups on post-test scores of the following variables: Academic Achievement, Stress, and Study Habits of students
- 3) There is no significant interactive influence of brain-based learning and hemisphericity of the experimental group on the basis of following variables: Academic Achievement, Stress, and Study Habits of students

## **Methodology**

Quasi-Experimental method was selected for the study. The design adopted was factorial design, the pre-test, and post test quasi-experimental design. Experimental group constituted students which are selected randomly and they underwent experimental treatment namely brain based learning strategy.

## **Sample**

The study was carried out on a sample of 240 students from 4 schools in which two were private-aided 120 students and two were private-unaided 120 students.

- Three stage sampling technique was used at the first stage, stratified random sampling was used for selecting private-aided and private un aided schools.
- At the second stage, through simple random sampling (lottery method) schools were assigned to the experimental and control groups and
- at the third stage, the sampling technique used was incidental sampling in order to select students.

## **Tools**

Educational Hemisphericity (Venkataraman 1996), Study Habits Inventory Scale (Ferris, 2001), Stress (D'souza, 2007), Raven's Progressive Matrices, Achievement Test in Biology (Researcher-made) Personal Data Sheet

## **Instructional Material**

Lessons based on Brain-Based learning and Lessons based on lecture method.

## **Techniques of Analysis of the Data**

t-test, ANOVA, ANCOVA were used for the analysis of the data

## **Significance of the Study**

- The researcher found that the teaching would be highly effective if the teachers start using the principles of brain research in their classrooms.
- The findings of the study have a major bearing on the curriculum planners to explore new dimensions to keep students as well as teachers abreast with new explosions in research.
- It also provides scope for self-organized and self-directed learning along with interactive and collaborative learning and learning become authentic and situated learning.
- The findings of the research brought advantages of a holistic view of the classroom, taking the physical and affective dimensions of learners into account if their cognitive side is to function optimally.
- The incorporation of brain-based learning and hemispheric dominance is an effective way to broaden both the goals and the range of tools at disposal for teaching in the Indian context.
- The present study on brain-based learning and hemisphericity shows that it has got a significant influence on student's academic achievement, their stress level and it has the potential to make a remarkable change in students study habits also.
- The research finding supports that it develops dynamic interaction and more teacher-pupil collaboration, which leaves scope for better stress management options, which is a burning issue in the education sector.

## **Major Findings of the Study**

- Comparison of Pre-Test Scores on academic achievement, stress and study habits of Experimental and Control Groups shows that there is no significant difference in the pre-test scores of experimental and control groups on academic achievement, stress and study habits.
- Comparison of Post-Test Scores on Academic Achievement of Experimental and Control Groups shows there is a significant difference in the post-test scores on academic achievement of students of experimental and control groups.
- Comparison of Post-Test Scores on Stress of Experimental and Control Groups shows that there is significant difference in the post-test scores on total stress of

experimental and control groups. The obtained t ratio 20.61 is greater than 2.58 and hence is significant at 0.01 level.

- Comparison of Post-Test Scores on study habits of Experimental and Control Groups shows that there is significant difference in the post-test scores on study habits of experimental and control groups. The t- value obtained for the post-test scores on study habits is 27.42 which is greater than 2.58. Hence it is significant at 0.01 level.
- The null hypothesis states that there is no significant interactive influence of treatment and gender on academic achievement. The technique used to test this null hypothesis is the two-way classification of analysis of variance, (ANOVA). Since the F- ratio with respect to gender is found less than the table values hence it is found that there is no interactive effect of treatment and gender on Academic Achievement.
- There is no significant interaction effect of treatment and gender on total stress.
- There is significant interaction effect of treatment and gender on study habits of students.
- There is no significant effect of levels of intelligence on academic achievement and there is a significant interaction effect of intelligence and treatment on academic achievement and also found that there is no significant interaction effect of intelligence on stress and study habits.
- There is no significant interaction effect of hemisphericity and treatment on Academic achievement, stress and study habits of students.

### **Conclusions of the Study**

- There is an effect of the treatment on academic achievement in biology of VIII students.
- A significant variation is found in the stress levels of students from the experimental groups
- There is a significant effect of treatment on study habits of students from the experimental groups
- The treatment is effective in improving the academic achievement in Biology, reducing the stress levels of students and thereby enables better study habits among students.
- There is no effect of gender on academic achievement, stress- academic stress, examination stress and social stress and total stress.
- There is no effect of intelligence on academic achievement, stress- academic stress, examination stress, social stress separately and in total stress.
- There is a significant effect of intelligence on study habits of students. Moreover a significant interaction of intelligence (low and average IQ ) on academic achievement and study habits of students.
- There is no significant effect of hemisphericity on academic achievement, stress-academic stress, examination stress and social stress and total stress and study habits of students.
- There is a significant interactive effect of hemisphericity (right hemisphericity) on academic achievement and social stress of students.

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