ISSN 2278-8808
An International Peer Reviewed
SCHOLARLY RESEARCH JOURNAL
FOR INTERDISCIPLINARY STUDIES

Brain-based Learning- A compatible equation for stress management of students': An experimental study

Mary George Varghese,
Pillai's College of Education and Research,
Chembur. Mumbai

Received: 29 January 2013
Accepted: 21 February 2013

Abstract

The study shows the stress involved in the secondary standard students. It states how the stress can be reduced with the help of effective learning mechanism. The study includes Brain-Based Learning as teaching –learning strategy. As the neuro-psychological strategy i.e., brain-based learning follows the principles of brain functioning in the practical aspects, it care for the affective domain of the learner along with the cognitive and psycho-motor domains at individual levels.

Key Words: *Brain-Based Learning, Stress*

The children of the present century are undergoing lot of stress. The stress levels are of higher degrees at all levels of schooling. The underlying causes are ranging from factors related to personal, school and society. A wide range of stressors have to be taken care at various points of instruction. This is a real challenge for the teachers to address it along with other school related issues. A teacher should provide an optimum learning environment to students. So curbing the stressors and providing a stress free environment become a major challenge for the today's teacher. So this demands a shift in approach at various levels.

Students are natural thinkers and pattern-seekers who are born to learn. Tapping into their innate abilities is the key to engage students in their own learning. This innovative guide helps teachers to maximize student engagement and achievement by combining brain research, classroom applications, and teaching skills based on the Natural Human Learning Process (NHLP). The brain- based learning is a teaching learning strategy designed to reduce both causes and consequences associated with academic stress and improve students' mental and physical health and well-being and thereby enhance their learning.

Brain-Based Learning

It is an effective teaching strategy for teachers striving to improve student achievement by focusing on how the brain learns and it provides a blueprint for deliberate, thoughtful, and

engaging teaching strategies. It is concerned with how to be more effective in the classroom. Brain-based Learning provides an accessible framework based on how the brain learns, and shows how to use that knowledge to help both teachers and students reach higher performance levels.

Stress

Stress is an agitated physiological state in which the transmission of information along neuron is heightened to the point that the nervous system may collapse and / or bodily functions may perform poor. Academic stress is a mental distress with respect to some anticipated frustrations associated with academic failure or even awareness to the possibility of such failure.

Teaching through brain-based learning is great mode of reducing stress connected with learning and dealing more efficiently with learners' emotions, facilitate deep learning environments through group activities.

Review of Related Literature

Indian researches have made a sizeable contribution in the area of stress and anxiety emanating in different domains of life.

Sharma and Dang (1977) reported that high trait anxiety persons experience greater elevation of state anxiety in situations threatening their self-concept. In a study of high school students from nine cultures, Sharma and Sud (1990) observed that test; anxiety developed from parents' unrealistic expectations of their wards' performance, sustained negative feedback, punitive behavior towards the child, particular to the performance evaluation and emotionally inspired, overly strict socializing practices. Verma (1990) studied sex related differences in risk-taking, self confidence and anxiety among adolescent learners in an attempt to confirm the findings of previous researches in the Indian context. Padmasri (1992) conducted a study on the stressful life events in the school system and educational development in children. Supe (1998) it was seen that academic factors were greater perceived than all other factors as causes of stress, followed by physical and social factors and the emotional factors. Petzel and Riddle (1981) maintained that a poor or an overachieved academic performance can serve as a precursor to stress, subsequent depression, and suicidal tendencies. Peck (1989) has suggested that suicidal indication as a coping strategy is prevalent among adolescents faced by high stress levels. Compas and Wager (1991) have noted a significant increase in stress levels encountered by adolescent girls as compared to boys. In a study of 484 students in 9^{th} – 12^{th} grades, Phelps and Karvis (1994) noted that adolescent stressors emanate mainly from parental and peer conflicts, grades, academic concerns and extra-curricular activities. Ross, Niebling and Heckert (1999) determined common sources of stress among college students. Ranjita Misra, Michelle McKean (2000) College Students' Academic Stress and its relation to their anxiety, time management, and leisure satisfaction.

Significance of the problem

It has been observed that a number of studies conducted on the effect of various variables on stress. But no studies have been conducted to see the effect of brain based learning on stress. Since the brain-based learning is according to the principles of the functioning of the brain and give emphasis to the affective domain it provides a very conducive learning environment. These factors have given insight to the researcher to undertake a study on the effect of brain-based

learning on Stress of the students. The research outcomes brought out the effectiveness of brain-based learning in reducing the stress specifically achievement, social and examination stresses. The research also gives way to the approval of the innovative teaching strategies like brain-based learning on stress management among the students and highlights the therapeutic impact of the innovative teaching strategies.

Statement of the Problem:

To study the effect of brain-based learning on stress of VIII standard students

Objectives of the study

- To develop instructional materials based on the principles of brain-based learning.
- To compare experimental and control groups on pre-test scores of stress
    a) Achievement stress
    b) Examination stress
    c) Social stress
- To compare experimental and control groups on post-test scores of stress.
    a) Achievement stress
    b) Examination stress
    c) Social stress

Hypotheses of the Study

The null hypotheses formulated in the study are:

1). There is no significant difference between experimental and control groups on pre-test scores of stress a) Academic stress b)Examination stress and c) Social stress.

2) There is no significant difference between the experimental and control groups on post-test scores of stress a) Academic stress b) Examination stress and c) Social stress.

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. A three-stage sampling technique was used to select the sample in which 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.

Tool

The following tool was used in the study

- ❖ Stress (D'souza 2007)

Instructional Material

- Lesson plans based on Brain-Based learning
- Lessons plans based on the traditional lecture method.

Methodology of the Study:

Quasi-Experimental of the pre-test, post test quasi-experimental design type, viz. O_1 X O_2 O_3X O_4 method was used in the study. Here, O_1 and O_3 are the pre-test scores, O_2 and O_4 are the post-test scores. The experimental group was taught using the brain-based learning method whereas the control group was taught using the traditional lecture method. The investigator

taught 25 lessons through brain based learning strategies. The same number of lessons taught through lecture method in the control group simultaneously.

Treatment : The researcher designed appropriate learning and teaching strategy based on the three basic fundamentals of brain-based learning, namely 'orchestrated immersion', 'relaxed alertness', and 'active processing'.

Techniques of Analysis of the Data

The techniques adopted for data analysis in the present study were t-test, ANCOVA, Wolf's test.

Major findings of the study

Comparison of Pre-Test Scores on total stress of Experimental and Control Groups

The null hypothesis states that there is no significant difference in the pre-test scores on stress of experimental and control groups. The obtained t ratio is 0.75 which is less than 1.96 and hence is not significant. Hence null hypothesis is accepted at 0.05 levels.

Conclusion: There is no significant difference in the pre-test scores on stress of experimental and control groups.

Comparison of Pre-Test Scores on academic stress of Experimental and Control Groups.

The null hypothesis states that there is no significant difference in the pre-test scores on academic stress of experimental and control groups. The obtained t ratio is 3.29 which is greater than 2.58 and hence is significant at 0.01level. Hence null hypothesis is rejected.

Conclusion: There is a significant difference in the pre-test scores on academic stress of experimental and control groups. The pre-test scores on academic stress of experimental and control group is found to be highly significant (t= 3.29). The pre-test score of academic stress of the control group is significantly greater than that of the experimental group.

Since as per the finding it was found that the t-ratio of the experimental group on the pre-test is significantly greater than that of the control group, it implies that, the experimental and the control groups have been unequal initially on academic stress. In order to remove these initial differences on pre-test scores on academic stress of the two groups, it was necessary to apply the technique of ANCOVA. Hence the application of the technique of ANCOVA to remove the initial differences in the academic stress of the experimental and the control groups and then compare the post-test scores of academic stress of these groups.

Comparison of Pre-Test Scores on examination stress of Experimental and Control Groups.

The pre-test scores on examination stress of experimental and control groups are found to be not significant. The obtained t ratio is 0.78 which is less than 1.96, it is clear that the control group and experimental group do not differ on the examination stress.

Conclusion: Since the tabulated t-ratio is less than 1.96, it can be concluded that the experimental and control group do not differ on pre-test scores on the examination stress at 0.05 level.

Comparison of Pre-Test Scores on social stress of Experimental and Control Groups.

The obtained t- ratio1.58 for the pre-test scores on social stress is less than 1.96 hence it is not significant at 0.05 level.

Conclusion: There is no significant difference in the pre-test scores on social stress of experimental and control groups.

Comparison of Post-Test Scores on total stress of Experimental and Control Groups

The null hypothesis states that there is no significant difference in the post-test scores on 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. Hence null hypothesis is rejected.

Conclusion: There is a significant difference in the post-test scores on stress of experimental and control groups. The post test scores on the stress of the experimental group is significantly differs from that of the control group.

Comparison of Post-Test Scores on Academic Stress of Experimental and Control Groups.

The obtained t-ratio 17.02 is greater than 2.58 and hence is significant at 0.01 level. Hence the null hypothesis is rejected.

Conclusion: There is a significant difference in the post-test scores on academic stress of experimental and control groups. The post test scores on the academic stress of the experimental group is significantly differs from that of the control groups.

Comparison of Post-Test Scores on Examination Stress of Experimental and Control Groups.

The obtained t ratio14.07 is greater than 2.58 and hence it is significant at 0.01 level.Hence the null hypothesis is rejected.

Conclusion: There is a significant difference in the post-test scores on examination stress of the experimental and control groups. The post-test scores of the examination stress of the experimental group is differ significantly from that of control groups.

Comparison of Post-Test Scores on social stress of Experimental and Control Groups.

The t- ratio obtained is12.24 for the post-test scores on social stress of experimental and control groups. This is greater than 2.58 hence it is significant at 0.01level. Hence the null hypothesis is rejected.

Conclusion: There is a significant difference in the post-test scores on social stress of experimental and control groups. The post test scores on the social stress of the experimental group are significantly different from that of control group.

Effect Size: The effect size was calculated using Wolf's formula and was found to be 8.13 which may be termed as very high as it is above 0.8.

Educational Implications of the Study: The study found that brain-based learning follows a student friendly strategy for teaching learning process; it has got a direct relationship with stress. The strategy is very compatible in reducing the stress factor and thereby enhances the student learning to a great extent.

As the neuro-psychological strategy i.e., brain-based learning follows the principles of brain functioning in the practical aspects, it care for the affective domain of the learner along with the cognitive and psycho-motor domains at individual levels. It also promotes learning in collaboration and cooperative mode and provides a lot of scope for the individuals to construct his or her knowledge with complete ego involvement. This enhances optimal learning among students in a very relaxed and enriched learning environment.

Hence brain-based learning as an instructional strategy is found to be very effective, hence the teachers and the prospective teachers should be oriented about the theory and practice related to this, and should get assistance for its implementation in the classrooms. The curriculum developers should design the content according to the latest brain research outcomes and leave a scope for the teachers to impart the curriculum according to the principles of Brain-based learning. SCERTs, DIETs etc should take up the responsibility of organizing in-service training and workshops to acquaint the teachers with the new research outcomes of brain-based learning.

References

Abouserie, R. (1994). Sources and levels of stress in relation to locus of control and self-esteem in university students. *Educational Psychology, 14*, 323–330.

Baugh, F., and Thompson, B. (2001). Using effect sizes in social science research: New APA and journal mandates for improved methodology practices. *Journal of Research in Education,11*, 120–129.

Jennings W, Caulfield J. Moving your school to brain compatibility. Networker. 1997; 9:36-42.

Jensen E. Teaching with the Brain in Mind. Alexandria, VA: Association for Supervision and Curriculum Development; 1998.