THE EFFECTS OF BRAIN BASED LEARNING APPROACH ON STUDY HABITS AND TEST ANXIETY AMONG FIRST YEAR PREPARATORY SCHOOL STUDENTS WITH LEARNING DISABILITIES

Abstract: The purpose of this study was to investigate the effects of brain-based learning approach on study habits and test anxiety among first year preparatory school students with learning disabilities. 60 students participated in the present study. Each student participant is of low achievement scores on one or more standardized tests or subtests within an academic domain (i.e., at least 1.5 standard deviations [SD] below the population mean for age. For collecting and analysing data, Study Habits Test, and Test Anxiety scale were employed. The program was designed based on the three basic fundamentals of brain-based learning, namely 'orchestrated immersion', 'relaxed alertness', and 'active processing'. The brain-based learning program was conducted to the whole class by their actual teacher during the actual lesson period for 8 weeks with 45-minute sessions conducted three times a week. The results of this study showed that the brain-based learning approach was effective in improving study habits and relieving test anxiety of students in experimental group, compared to the control group whose individuals did not receive such a training. Results, recommendations and conclusion were included and discussed.

Keywords: brain-based learning approach, study habits, test anxiety, students with learning disabilities.

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INTRODUCTION

Brain based learning theory is about recognizing how the brain learns and organizes information to make learning meaningful. Some researchers (e.g. Jensen, 2008, 4) regard brain-based learning as a learning in accordance with the way the brain is naturally designed to learn. Student can learn better in a well-formed environment, that is, an environment where he/she is allowed to understand the why's of what he or she is doing (Jensen 2005). Caine (1994) suggest twelve principles of brain-based learning that serve as the theoretical foundation of the approach. These are the following:

1. The brain is a parallel processor.
2. Learning engages the entire physiology.
3. The search for meaning is innate.
4. The search for meaning occurs through patterning.
5. Emotions are critical to patterning.
6. The brain processes parts and wholes simultaneously.
7. Learning involves both focused attention and peripheral perception.
8. Learning always involves conscious and unconscious processes.
9. We have at least two different types of memory: A spatial memory system and a set of systems for rote learning.
10. We understand and remember best when facts and skills are embedded in natural, spatial memory.
11. Learning is enhanced by challenge and inhibited by threat.
12. Each brain is unique (pp. 87-96).

These twelve principles suggest that effective learning could occur only through practicing real life experiences.

Sousa (2001) stated that this theory was based on neuroscience, which gave important information about the brain, how it learns, including how it works, its interpretation and storage of information. The theory of brain-based learning requires that we shift our focus to the learning process and the possibility of using this information to conduct learning.

TEST ANXIETY

Test anxiety is a multidimensional construct (Damer and Melendres 2011). It occurs when a student feels extreme distress and anxiety in test situations (Omaima, 2018). It can be defined as a "set of phenomenological, psychological, and behavioural responses that accompany concern about possible negative consequences or failure of an exam or similar evaluation situations" (Zeidner 2007). A student, who is anxious during exams, has a specific reaction to the examination situation, such as an emotional, cognitive, behavioural, or physiological reaction (Dan and Raz, 2012). These reactions to the examination situation not only are present while student takes a test, but while he prepares for the test as well (Cohen, Ben-Zur and Rosenfeld 2008). There are negative associations between test anxiety and overall test performance, academic achievement, and intellectual aptitude tests (Chapell et al. 2005). Students who have test anxiety do not perform to their full potential, resulting in test scores that do not accurately represent their knowledge and understanding of the test material (Shobe 2005). Test anxiety has its own presence through worry and self-denigrating thoughts (Damer and Melendres 2011).

STUDY HABITS

It can be said that student 's study habits are what determine his/her level of academic achievements. Lack of effective or positive (good) study habits can undermine student's success. Many students, especially those with learning disabilities lag behind, and fail their examinations not because they lack of knowledge or ability to succeed, but because they do not have adequate study habits and study skills. Tuncay ERGENE (2011) investigated the relationships among study habits, test anxiety, achievement, motivation, and academic success in a Turkish tenth grade high school sample. and 243 (47.6%) were males. The data were collected by the Turkish version of Test Anxiety Inventory (TAI), Study Habits Inventory (SHI) and Self Evaluation Inventory (SEI). s. Small but significant correlations were found between the worry subscale of TAI scores and academic success ($r = - 0.18$, p 0.01), and between the Study Habits Scale scores and academic success level ($r = 0.15$, $p < 0.01$). A positive relationship between

study habits scores and achievement motivation level (r=.39, p 0.01) was found.

PROBLEM STATEMENT

Taking into account learner characteristics, engaging students in the learning process, and promoting collaboration among all students in general and students with learning disabilities in particular have become necessary for the quality of instruction, and for eliminating the limitations of the traditional way of teaching. Students with learning disabilities suffers a lot in our educational system because of instructional methods adopted. Those students need a different environment where their needs are met. They need teaching strategies which enable them to feel secure in the learning environment. If this occurs, then their redundant fears and anxiety will be eliminated. Nevertheless, there is a scarce research investigating the influence of brain-based learning on study habits and test anxiety among students with learning disabilities, which has been the motive for the researcher to conduct this research.

Thus, the present study addresses the following two questions.

1. Are there differences in post-test scores mean between control and experimental groups on Study Habits Test?
2. Are there differences in post-test scores mean between control and experimental groups on Test Anxiety scale?

PURPOSE OF THE STUDY

The purpose of this study was to investigate the effects of brain-based learning approach on study habits and test anxiety among first year preparatory school students with learning disabilities. by gaining a better understanding of this process, teachers can apply the findings to create safe, stress-free classrooms that will engage the minds of students, improving their study habits and relieving their test anxiety.

HYPOTHESES

In this study, two alternative hypotheses were raised and tested at 0.01 level of significance thus:

Ho1: There are differences in post-test scores mean between control and experimental groups on Study Habits Test.
Ho2: There are differences in post-test scores mean between control and experimental groups on Test Anxiety scale.

SIGNIFICANCE OF THE STUDY

The result of this study would enable students to develop good habits, and relieve their test anxiety which could lead to good academic performance. The result of this study would be of great benefits for school teachers who would start to use brain-based learning approach in their instruction. The result of this study would enable policy makers to initiate programs that would facilitate effective study habits and relieve test anxiety among students with learning disabilities.

METHODS

PARTICIPANTS

60 students participated in the present study. Each student participant is of low achievement scores on one or more standardized tests or subtests within an academic domain (i.e., at least 1.5 standard deviations [SD] below the population mean for age, (Mourad Ali, 2018). The sample was randomly divided into two groups; experimental (n= 30, 22 boys, 8 girls) and control (n= 30, 20 boys and 10 girls).

The two groups were matched on age, IQ, study habits, and test anxiety. Table 1. shows means, standard deviations, t- value, and significance level for experimental and control groups on age (by month), IQ, study habits, and test anxiety (pre-test).

Table 1. Means, standard deviations, t- value, and significance level for experimental and control groups on age (by month), IQ, study habits, and test anxiety (pre-test).

Variable	Group	N	M	SD	T	Sig.
Age	Experimental	30	142.04	1.26	-.131	Not Sig.
	Control	30	142.08	1.23		

IQ	Experimental Control	30 30	114.22 114.39	1.15 1.04	-.218	Not Sig.
study habits	Experimental Control	30 30	45.83 44.80	1.00 1.52	-.507	Not Sig.
test anxiety	Experimental Control	30 30	83.36 84.13	1.15 1.22	-.411	Not Sig.

Table 1. Shows that al t-values did not reach significance level. This indicated that the two groups did not differ in age (by month), IQ, study habits, and test anxiety (pre-test).

INSTRUMENTS

*Study Habits Inventory (*prepared by the researchers particularly for this study). The aim of this inventory was to assess learning disabled students ' study habits. The 37-item inventory follows 3-point Likert scale (Not at all typical of me, Only somewhat typical of me, and Very typical of me.). The test-re-test reliability of the questionnaire was found out to be 0.82, The validity of the questionnaire found out by finding the inter-item consistency which proved to significant at the 0.01 level for all items.

Cognitive Test Anxiety scale (Adopted by Omaima,2018). A 27-item scale which is generally completed by undergraduate students in 8 to 15 min. The Scale follow 4-point Likert scale (Not at all typical of me, Only somewhat typical of me, Quite typical of me, and Very typical of me). The test-re-test reliability of the questionnaire was found out to be 0.87, The validity of the questionnaire found out by finding the inter-item consistency which proved to significant at the 0.01 level for all items.

PROCEDURES

Screening: 60 students participated in the present study. Each student participant is of low achievement scores on one or more standardized tests or subtests within an academic domain (i.e., at least 1.5 standard deviations [SD] below the population mean for age.

Pre-intervention testing: All the sixty students completed Study Habits Inventory, which assesses students' study habits and Cognitive Test Anxiety scale which assesses students' test anxiety. Thus, data was reported for the students who completed the study.

General Instructional Procedures: The brain-based learning program was conducted to the whole class by their actual teacher during the actual lesson period for 8 weeks with 45-minute sessions conducted three times a week. The program was designed based on the three basic fundamentals of brain-based learning, namely 'orchestrated immersion', 'relaxed alertness', and 'active processing'. In the 'orchestrated immersion' phase, the students, with the help of their teacher, used various pictures, power- point presentations, cartoons and comic strips. These helped them the concepts presented and the subject matter as a whole as well. As for 'relaxed alertness,' phase, cooperative learning was present. Students collaborated with one another. Students were asked to write down, share and discuss with their classmates. The aim was to eliminates fear in the learners while maintaining highly challenging environments. During the 'active processing' phase, the learner was allowed to consolidate and internalize information by actively processing it. simulations, group discussions, role plays and dramatization techniques were used in order to ensure the retaining of the obtained knowledge and to ease the structuring of this knowledge as well as applying it into new situations.

DESIGN AND ANALYSIS

The effects of brain-based learning approach on study habits and test anxiety among first year preparatory school students with learning disabilities were assessed using pre- post- and two groups design.

RESULTS

The first purpose of this study was to investigate the effects of brain-based learning approach on study habits. Table 2. shows data on ANCOVA

analysis for the differences in post- test mean scores between experimental and control groups in study habits. The table shows that the (F) value was (131.099) and it was significant value at the level (0.01).

Table 2. ANCOVA analysis for the differences in post-test mean scores between experimental and control groups in study habits

Source	Type 111 Sum of squares	df	Mean square	F	Sig.
Pre	17.004	1	17.004		
Group	30055,895	1	30055,895		
Error	13067.862		229.261	131.099	0.01
Total	43369.933	57			
		59			

Table 3. shows T. test results for the differences in post- test mean scores between experimental and control groups in study habits. The table shows that (t) vale was (11.586). This value is significant at the level (0.01) in the favour of experimental group. The table also shows that there are differences in post- test mean scores between experimental and control groups in study habits in the favour of experimental group.

Table 3. T. test results for the differences in post- test mean scores between experimental and control groups in study habits.

Group	N	Mean	Std. deviation	T	Sig.
Experimental			1.40	11.586	0.01
Control	30	83.83	2.94		
	30	47.63			

The second purpose of this study was to investigate the effects of brain-based learning approach on test anxiety. Table 4. shows data on ANCOVA analysis for the differences in post- test mean scores between experimental and control groups in test anxiety. The table shows that the (F) value was (349.427) and it was significant value at the level (0.01).

Table 4. ANCOVA analysis for the differences in post-test mean scores between experimental and control groups in test anxiety

Source	Type 111 Sum of squares	df	Mean square	F	Sig.
Pre	262.512	1	262.512		
Group	25160,538	1	25160,538		
Error	4104.288		72.005	349.427	0.01
Total	29336.400	57			
		59			

Table 5. shows T. test results for the differences in post- test mean scores between experimental and control groups in test anxiety. The table shows that (t) vale was (18.211). This value is significant at the level (0.01) in the favour of experimental group. The table also shows that there are differences in post- test mean scores between experimental and control groups in test anxiety in the favour of experimental group.

Table 5. T. test results for the differences in post- test mean scores between experimental and control groups in test anxiety.

Group	N	Mean	Std. deviation	T	Sig.
Experimental			1.15	18.211	0.01
Control	30	42.00	4.68		
	30	82.80			

DISCUSSION

The purpose of this study was to investigate the effects of brain-based learning approach on study habits and test anxiety among first year preparatory school students with learning disabilities. The results of this study showed that the brain-based learning approach was effective in improving study habits and relieving test anxiety of students in experimental group, compared to the control group whose individuals did not receive such a training.

This goes in the same line with Hoge (2002), who claims that brain-based learning facilitates students developing positive literacy experience and motivate students to being literate. Sel (2006) found that brain-based learning improves success in his research on foreign language teaching. Palavan (2012) found that brain-based learning was an effective method. Adel ElAdl and Mourad Ali (2019 in this volume) showed that students in

the experimental group, compared to those in the control group, developed robust working memory and academic motivation due to training in brain-based learning.

It can be claimed that any instructional method that teachers can employ to enhance achievement and retention of their students such as integrating other brain-based activities is regarded as a valuable and effective teaching tool (Maryam Haghighi, 2013).

RECOMMENDATIONS

Further research in which participants are from different age groups is also required to compare the impact of brain-based learning on study habits and test anxiety. Particularly students with learning disabilities who took part in this study may achieve great success improving study habits and relieving test anxiety which indicate the positive influence of brain-based learning. So, they may demonstrate a tendency to continue employing brain-based learning principles in the following years of their education life.

CONCLUSION

The purpose of this study was to investigate the effects of brain-based learning approach on study habits and test anxiety among first year preparatory school students with learning disabilities. The findings revealed that orchestrating teaching in accordance with brain-based learning principles helped the participants during the intervention. This study could motivate researchers and practitioners to conduct similar studies with different populations with different age. This study, in the light of the findings, revealed that making amendments in teaching practices according to brain-based learning principles might enable improving study habits and relieving test anxiety.

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