

# BRAIN-BASED DIGITAL LEARNING TECHNOLOGIES AND ACHIEVEMENT IN SOCIAL SCIENCE

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## **Abstract**

*The purpose of this study was to find out the effectiveness of Brain-Based Learning technologies and achievement in student-teacher educators. The present study is experimental with pre-test post-test single group design. Total of 50 student teachers is selected by purposive sampling and a single group from Avinashilingam Institute for Home Science and Higher Education for Women in Coimbatore. Both groups were measured and compared at the end of the sessions. It can be concluded from the present study that Brain-Based technologies are more effective and had higher scores than the conventional method after analyzing and measuring t-test as the statistical measurement.*

**Keywords:** Brain-based learning, digital technology, classroom, teacher educators.

## **INTRODUCTION**

The brain is a very important part of human being and animals also. All those learns with the help of brain that Students optimally benefit when their assignments are challenging and the classroom environment feels safe and supportive Daniel Goleman (1994) expands upon the importance of eliminating threat from the classroom in the influential emotional intelligence why it can matter more than IQ Each brain is uniquely organized when teaching we need to consider how each student learns most effectively each student has his or her own. Every brain is different; teachers should allow learners to customize their own environments.

## **BRAIN-BASED LEARNING**

Brain-based learning can be viewed as techniques gleaned from research in neurology and cognitive science used to enhance teacher instruction .these strategies can also be used to enhance student ability to learn using way as in which they feel most comfortable neurological speaking Jensen (1995/2000) defines BBL is that it compasses and combines specific types of research-based academic interventions as well as applied accepts of emotional learning.

Jensen defined brain-based learning as “learning in accordance with the way the brain is naturally designed to learn”. Hart described the brain as the organ of learning and advocated learning more about the brain to design effective learning environments. Brain-based learning is

an instruction, which considers how the brain obtains, processes, and interprets information, as well as connects, stores, and recalls the messages.

## TECHNOLOGY CLASSROOM:

Technology provided a strong powerful tool in supporting inclusive practice in a classroom in SWD learners. These technologies are beneficial and have been shown to help with educational tasks; their design and usability are an issue. The use of technology devices is highly beneficial and also very challenging for some categories of students that the possibility of filling in some of the existing gaps can be guaranteed only if fully accessible educational products are used. There are carefully considered the potential of devices to support the school. There are three important devices used for inclusive education like accessibility, usability, and availability. 1. Accessibility is the standard word that describes “the degree to which a product (e.g., device, service, environment) is accessible”, that is it can be used (both from a physical and cognitive viewpoint) by as many people as possible. 2. Usability is a “qualitative attribute that refers to how easy user interfaces are to use” namely it takes into account the actual clarity and ease of use of the tools. 3. Availability is a less standardized term that refers to the actual possibility of having at one’s own disposal of the device in order to fulfill educational objectives.

## STATEMENT OF THE PROBLEM

Statement of the problem outlines the research purpose, variables selected and the issues to be addressed. The present study aimed to find out the effectiveness of brain-based technologies and achievement in a Social Science subject. Hence the study is stated as

**“Brain-based digital learning technologies and achievement in social science”**

## LITERATURE SURVEY

Review of related literature is essential in conducting a study. It gives an overall idea about the theory, related studies, research patterns adopted and the importance of the variables selected for the study. The review also helps a researcher to get in-depth knowledge and aspects related to the selected variables; it also helps in avoiding duplication. The present study aimed to find out the effectiveness of Brain-Based Learning and achievement in science subject through brain gym exercises.

**Duman**(2010) compared the effects of brain-based learning on the academic achievement of Students with different learning styles. In this study, he has selected the sample for the study which consisted of 68 teacher education students. Data were collected by using Academic Achievement tests and the Kolb’s Experiential Learning Style questionnaire. The findings of the study revealed that the Brain-Based Learning approach used in the experimental group was more effective in increasing student achievement than the traditional approach used in the control group.

**McNamee** (2011) conducted the study in a literature unit based on brain research which has Improved reading achievement as measured by the Sunshine State Standards Reading Diagnostic Assessment (RDA). An experimental group of 25-second grade students participated in the brain-based literature unit, whereas the control group of 19-second grade students participated in traditional teaching practices. After the RDA was administered as the pretest, the experimental group participated in the 12-week intervention while the control group received traditional reading instruction was again administered as the post-test. The brain-based Instructions had a positive impact on reading achievement in a second-grade classroom.

**Mustafa Erol1, Gülşah Batdal Karaduman (2018)** studied The Effect of Activities Congruent with Brain-Based Learning Model on Students' Mathematical Achievement. The purpose of this study is to investigate the effects of teaching activities prepared with brain-based learning model on mathematics success of primary school students. In the study, pre-test-post-test and permanence test half-experimental design with a control group was used. The participants of the experiment consist of a total of 91 fourth-grade primary school student's continuing education in İstanbul and also taking part in experimental and control groups. the findings of the research, a significant difference has been found in favor of the experimental group regarding the mathematics achievement of the fourth-grade students and persistence of knowledge they have learned.

**Jayalakshmi Ramakrishnan,** (2015) studied the Effectiveness of Brain-Based Learning Strategy for Enhancing Creativity among IX Standard Pupils. The purpose of this study was to find out the effectiveness of Brain-Based Learning Strategy for enhancing Creativity among IX standard pupils. The present study is quasi-experimental in nature with pre-test post-test nonequivalent group design. Total of 50 subjects was selected by purposive sampling and divided into two groups and controls groups from a Government Aided school in Coimbatore. Both groups were measured and compared at the end of the sessions. It can be concluded from the present study that the Brain-Based Learning strategy is more effective in the experimental group.

## **HYPOTHESIS OF THE STUDY**

The present study was designed to test the following hypotheses.

1. There is no significant difference between the pre-test and post-test scores of student teachers educated by Brain Based learning technologies on their UG and PG degree.
2. There is no significant difference in the achievement scores of student teachers applying by Brain Based learning technologies on their subject specialization.

## **METHODOLOGY**

The methodology adopted for the present study is a true experimental design in nature. Here, the investigator adopts pretest and post-test single group experimental design.

## **SAMPLE**

The investigator used nonrandomized sampling for selection of samples. This study was conducted in first year B. Ed students and the sample consisted of 50 student teachers studying in

different subjects which were classified under three major classification namely arts, science, and social science. To prepare the brain-based learning technologies were taken.

**METHOD**

The experimental method was used for the study pre-test and post-test single group design was used by the investigator. The study was conducted with student teachers in a single group. An achievement test consisted of 20 multiple choice questions was prepared and validated by the investigator and was used for the pre-test and post-test were analyzed using SPSS software.

**TOOL FOR THE STUDY**

The investigator used an Achievement test (constructed and validated by the investigator) in this study.

**RESULTS AND DISCUSSION**

**Comparison between pre-test and post-test for single group scores.**

An analysis was done to find whether there will be a difference in the pre-test and post-test scores of students using Brain-based learning technologies. Mean and paired t-test was done to find out if there is any statistically significant difference in the pre-test and post-test scores of students and the values are given in Table. 1

**Table. 1. Comparison of pre-test and post-test in single group achievement scores**

Pre-test Scores (N=50)		Post-test scores (N=50)		t-value
Mean	SD	Mean	SD	5.25**
13.06	2.45	15.3	1.75	

\*\* Significant at 0.01level

The result obtained indicated that there is a highly significant difference in the achievement of the student teacher using brain-based learning technologies. Hence the null hypothesis that ‘there is no significant difference in the pre-test and post-test scores of student teachers using the brain-based learning technologies are rejected.

**Table 2. Comparison of effectiveness of brain-based learning technologies on their achievement of student teachers based on UG Degree and PG Degree**

UG Degree		PG Degree		t-value	f-value
Mean	SD	Mean	SD	1.29**	0.91
1.93	2.22	2.82	2.24		

\*\* Not Significant at 0.05 levels

The result obtained indicated that there is no significant difference in the achievement of the student teacher using brain-based learning technologies. Hence the null hypothesis that ‘there is no significant difference in the pre-test and post-test scores of student teachers using the brain-based learning technologies is accepted.

### Comparison of effectiveness of brain-based learning technologies on their achievement of student teachers based on subject.

An effort was technologies based class taken to see if there is any significant difference in the achievement of student teachers brain-based learning technologies on their subject namely Arts, Science, and Social Science. The results obtained for a single factor ANOVA id presented in Table 3.

**Table 3. Comparison of effectiveness of brain-based learning technologies on their achievement of student teachers based on subject.**

ANOVA					
Post-test	SS	df	MS	F	Sig
Between Group	30.059	2	15.029	3.166	0.051
Within Group	223.06	47	4.745		
Total	253.12	49			

### CONCLUSION

Brain-based learning technologies are improving students interest, memory, concentration, learning styles, and success in a social science subject. It develops group discussion, attention, creative thinking, and different learning technologies among the learners. Hence brain-based learning technologies to support and improve the activities of their entire development through brain activation.

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