



Effectiveness Of Brain Based Learning Strategy Using Blended Mode Of Teaching Elementary School Science Students.

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ABSTRACT

The present research attempts to examine the effect of brain-based learning strategy in the light of blended learning on the academic achievement of class VII science students. The researcher implied the pre-test-post-test- control group experimental design. The investigation was carried out on a sample of 90 students of class VII Navodaya School of Chandigarh city. Students were randomly divided into experimental and control groups by simple random sampling technique. The experimental group was taught through brain-based instructional strategies in the light of blended mode whereas control group was taught with conventional method. The results of the research revealed that experimental group students outperformed in the post test, however the control group students had significantly lesser achievement in science. Brain-based instructional strategies in the light of blended mode are an effective method of teaching science for elementary level students.

Keywords: brain-based learning strategy, blended learning, Achievement in science

Introduction

We are living in an ICT dominated world where advancements in the area of behavioral sciences led to development of novel learning theories. Brain-based learning theory is an emerging theory that is based on principles of neuroscience, biological development and psychology of the learner. The theory emphasize on providing threat free, self-paced learning environment by utilizing the neuroscience based principles. The application of those principles into the field of Education has consequently driven the educators' attention towards effective use of online as well as in-person teaching that is the blended mode of brain based instructional strategies. In the present competitive era, where learner is the epitome of entire teaching-learning process and has an access to plethora of information, the objective of high achievement and better retention is significant to every learner. With rapid evolution in science, technology and behavioral sciences, the focus of entire teaching has now shifted to providing the learner better learning opportunities considering their potential, needs as well as learning context. The use of neuro-scientific principles for blended teaching suggests the integration of ICT to support other brain based principles. The idea of integrating technology as well as human communication is generally referred as Blended mode of teaching. Here the blended mode of learning refers to the best use of both worlds which utilize the positives of traditional approach with advantages of contemporary ones (Elissa.E. 2020).

Brain-based learning theory is an emerging theory of learning that evolved during the last decade of last century. The theory has its basis in various sciences such as neuroscience, psychology, biology, and computer science. (Eric Jensen, 2005). Brain based instructional strategies have been developed by adopting the significant principles of neurosciences (Caine & Caine, 1991). These principles indicate the psychological development of human brain according to the different human developmental stages. Further, this approach highlighted how teaching strategies developed through the potential neuro-scientific principles can help educators in achieving the objectives of learning. The neuro-science has developed following principles:

1. All learning engages the physiology
2. The brain/mind is social.
3. The search for meaning is innate.

4. The search for meaning occurs through patterning
5. Emotions are critical to patterning.
6. The brain/mind processes parts and wholes simultaneously
7. Learning involves both focused attention and peripheral perception.
8. Learning is both conscious and unconscious.
9. Explicit and Implicit Memory
10. Learning is developmental.
11. Complex learning is enhanced by challenge and inhibited by threat
12. Each brain is uniquely organized.

The above mentioned principles are the Basis on which the teaching strategies have been developed as per the physical as well as the psychological needs of the learners. The brain-based learning through blended mode of teaching acts as an approach that works like an old wine in new bottle. These strategies are a blend of technology as well as teachers that are implied for preparing the learners to achieve their learning objectives. In an attempt to address educational demands and create a productive learning environment, blended learning is regarded as one of the contemporary kinds of education that blends the benefits of online learning and e-learning with the drawbacks of in-person learning. (Ashraf.S., 2011).

With the advancements in the dynamics of learning, the recent educational researches aims at preparing the learners with high potential of interacting with their environment successfully and engaging in developing a conscious mind in a threat-free context that can consequently lead to better achievement. (Elity., 2014)

Science education is paramount to development of any nation. In a developmental country like India, teachers must be prepared as a resourceful person by training them for blended mode of teaching through brain based strategies. After the advent of pandemic, it is quintessential that prospective teachers must be able to incorporate ICT as well as other teaching strategies. Brain based strategies in the light of blended mode allows the teachers to proceed through online as well as other conventional strategies. Additionally, blended mode engages the learner in online as well as in-person activities thereby catering to the needs of diverse learners. Brain based instructional strategies have been classified categorically into three main types namely; Orchestrated Immersion, Relaxed Alertness and Assimilation. The characteristics of these have been judiciously implemented in the blended mode where learner is engaged in a threat free relaxed learning environment in order to achieve high.

Objectives

The objectives of the research are:

1. To study the effectiveness of brain-based instructional strategy using blended mode.
2. To prepare lesson plans based on brain based strategy using blended mode.
3. To prepare achievement test in science.
4. To compare the achievement in science of elementary students of experimental group and control group.

Method and Design

The present investigation falls under the domain of experimental research. Pre-test post-test Control group design was adopted by researcher. In the current study the investigator applied the blended mode of teaching as a brain based approach to experimental group in order to study its effectiveness.

Table showing t-value for difference in mean score of achievement of experimental and control group

Table 4.1

GROUP	N	Mean	SD	SEM	D	SED	Df	t	Sig.
EXPERIMENTAL GROUP (Blended Learning)	45	10.27	5.302	0.79	4.044	1.014	88	3.974	.01
CONTROL GROUP (Traditional Learning)	45	06.22	4.301	0.64					

*0.01 level of significance

To find out the mean gain scores on Achievement in Science of both the groups, the difference of the post test and pre-test was obtained for the two groups. The means, standard deviation (SD), standard error of means (SEM), significance of difference between means, standard error of difference (SED) and the significance levels of the two groups have been presented in the table 4.1. The t -value from the table that came out to be 3.974 for the difference in means of achievement in science of Experimental and Control group and this value is significant at 0.01 level of significance. Therefore, Hypothesis, "There exists no significant difference in achievement in science of elementary school students taught with Brain-based Strategies using Blended mode and Conventional teaching strategy" stands **rejected**. In other words, there exists a significant difference in achievement in science of students taught through Brain-based learning using Blended mode and

Conventional Approach. The students taught with Blended approach of Brain-based learning had significantly high achievement in science when compared to the Conventional method.

Sample

The study was carried out on a sample of 90 elementary school students of Navodaya Residential Schools of Chandigarh City. Researcher randomly selected two groups of 45 students each as experimental and control group.

Tools

In the current investigation researcher implied following tools:

Achievement Test in Science (Prepared by Investigator)

Lesson Plans on Brain based strategy using blended mode of teaching.

Statistical Tools

In the present investigation, researcher used t-test to compare the mean gain score on achievement in Science of Experimental and Control Group.

Results and Discussion

Findings and comments are presented according to the below research hypothesis.

- 1- There exists statistically significant difference between the mean scores of the pre-test and post-test measurements of the experimental group on the achievement in science of elementary school students.
- 2- The experimental group outperformed on achievement in science as compared to the control group which was taught by conventional method of teaching.

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