



## Review of Related Literature on Brain Based Learning

### KEYWORDS

Brain based learning, reading achievement, motivation, methodology and findings.

**Binulal.KR**

Assistant Professor in Education, Mount Tabor Training College, Pathanapuram, Kollam, Kerala Pin: 689 695

**Dr. Ampili Aravind**

Associate Professor, N.S.S Training College, Ottappalam, Palakkad, Kerala

**ABSTRACT** *The Review of related literature is an essential backbone and an important prerequisite of an investigation. It provides a comprehensive view of the topic, the relevance, the significance and practicability of the topic. In the field of education, the researcher needs to acquire up-to-date information about what has been done in the particular area from which he intends to take a problem for research. The investigator reviewed last five years of studies related to the topic brain based learning. From this it is understood that brain based learning focuses on concepts that create an opportunity to maximise attainment and retention of information. Also it can be applied to the learning process to understand the structure of the brain by considering the needs and styles of learners to evaluate and improve the course format and content delivery.*

### Introduction

The Review of related literature is an essential backbone and an important prerequisite of an investigation. It provides a comprehensive view of the topic, the relevance, the significance and practicability of the topic. In the field of education, the researcher needs to acquire up-to-date information about what has been done in the particular area from which he intends to take a problem for research. Here the review of related literature serves as a background for the present investigation and helps in understanding it in proper perspective. In the present study, the investigator discusses the related literature on brain based instructional practices. Brain based learning offers a framework to enhance student learning and application of brain research find wide coverage in the instructional design.

### Recent Reviews related to Brain Based Learning

**Saleh (2012)** conducted a study to find out the effectiveness of the brain based teaching approach in enhancing scientific understanding of Newtonian Physics among form four students. The technique was implemented based on the brain based learning principles developed by Caine and Caine (1991, 2003).

**Research Questions:** Is the brain based teaching approach effective in enhancing students' scientific understanding of Newtonian Physics in the context of form four Physics instruction.

**Methodology & Findings:** A quasi experimental research was adopted by selecting 100 students from two secondary schools in Malaysia. Data collected from the questionnaire of subjective items of Newtonian Physics were analyzed qualitatively to investigate the patterns formed.

The findings of the research showed that the teaching approach was effective in enhancing students' scientific understanding of Newtonian Physics. It was found that a majority of students from the group that followed the brain based teaching approach possessed a better scientific understanding of Newtonian Physics compared to the group that received conventional teaching method.

**Wachob (2012)** surveyed the knowledge, perception and implementation of brain based learning practices among public school teachers.

**Research Questions:** (i) What is the extent of knowledge the public school teachers have about the indicators of brain

based learning and brain gym? (ii) To what extent do the public school teachers report implementing brain based learning indicators in the classrooms? (iii) What is the relationship between the public school teachers' level of knowledge of brain based learning and indicators of brain gym and their beliefs about brain based learning? (iv) What is the relationship between gender, years of teaching experience and teachers' knowledge, perceptions and implementation related to brain based learning?

**Kiedinger (2011)** examined the influence of brain based learning on reading outcome in elementary aged students.

**Research Objective:** To gain an understanding of the effects of brain based learning practices on students as measured by the Reading Assessment from the Wisconsin Knowledge and Concepts Exam (WKCE).

**Methodology & Findings:** A survey method was designed by the researcher and distributed to the faculty of the students in grades three, four and five. The study found an increase in reading scores as measured by the WKCE. The most significant change originated in students on the lower end of the continuum. This can be attributed to the current understanding that students scoring proficient or advanced had brains that were more efficient at the task of evaluating and analyzing text; therefore, the brains of these students did not require the extra enrichment provided by brain-based learning; however, for students at the lower end of the continuum, brain-based learning necessitated an increase in scores. There was positive correlation between brain-based learning strategies and expected student achievement for these students.

**McNamee (2011)** studied the impact of brain based instruction on reading achievement in a second grade classroom.

**Research Objectives:** To determine if students who participated in a literature unit based on brain research would have improved reading achievement as measured by the Sunshine State Standards Reading Diagnostic Assessment (SSSRDA).

**Methodology & Findings:** An experimental group of 25 second grade students participated in the brain based literature unit, where as the control group of 19 second grade students participated in traditional teaching practices. After the SSSRDA was administered as the pre test, the experimental group participated in the 12 week intervention while the control group received traditional reading instruction. The SSSRDA

was again administered as the post test.

**Saleh (2011)** studied the effectiveness of the brain based teaching approach in dealing with issues related to the learning motivation towards the subject of Physics amongst secondary school students.

*Research Objectives:* To study (i) the effectiveness of the Brain Based Teaching Approach (BBTA) in generating students' learning motivation (ii) the learning motivation patterns towards the subject of physics; amongst those who are exposed to BBTA as compared to those who are only allowed the conventional teaching method (CTM).

*Methodology & Findings:* A quasi experimental research constitutes a sample of 180 students randomly selected from two schools. Student's learning motivation from both groups was measured before and after the intervention to determine the effectiveness of the implemented BBTA. Data obtained from students' journal documentation and interviews were then analyzed qualitatively using the progressive focus technique and then triangulated to obtain the required results.

The findings of the study showed that the BBTA module was an effective teaching approach in dealing with the issues afore mentioned. It was found that students who followed the BBTA module possessed a better Physics learning motivation compared to students who received CTM.

**Duman (2010)** investigated the effects of brain based learning on the academic achievement of students with different learning styles.

*Research questions:* (i) How is the learning style distribution of the students in the group? (ii) Are there any significant differences between the effects of brain based learning approach on the academic achievement of the experimental group students? (iii) Are there any significant differences among the academic achievement levels of the students in the experimental group depending on the learning styles? (iv) Are there any significant differences between the academic achievement of the experimental and control groups according to different learning styles?

*Methodology & Findings:* A pre test- post test experimental group design was used for the study. The sample for the study consists 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. However no significant difference was observed among the achievement levels of the experimental group students with different learning styles.

**Morris (2010)** examined the implementation of brain based instructional strategies by teachers serving at elementary, middle and high schools.

*Research Objectives:* The study was designed to determine (i) the extent to which teacher applied brain based strategies. (ii) the differences in application of brain based strategies among teachers. (iii) the differences among the use of brain based strategies and years of teaching experience (iv) the difference in the use of brain based strategies among teachers with and without National Board Certification.

*Methodology & Findings:* The data for the study were collected using a teacher survey by stating 460 teachers serving at schools. The data provided a broad perspective regarding teachers' implementation of brain based instructional practices in the classroom environment. Quantitative research methods were applied for the study.

From the results it was found that elementary teachers applied more of the surveyed brain based practices than middle or high school teachers. Also teachers with 0-10 years of experience used significantly fewer of the surveyed brain based practices than teachers with more experience. The mean scores suggested that National Board Certified teachers used each of the surveyed brain based practices more often than other teachers.

**Hutchins (2009)** conducted a qualitative multi-site case study on three elementary schools in the State of Georgia that utilize brain based instructional strategies in the educational process.

*Research Objectives:* (i) To increase the understanding of the philosophical foundations of brain based learning and how it is being used in conjunction with or opposed to other instructional strategies. (ii) To gain in-depth knowledge of the teaching strategies and construct meaning by investigating brain based learning in real life contexts- the classrooms and (iii) To develop theoretical explanation of brain based learning.

*Methodology & Findings:* Perceptual data were gathered by observation, interview, video recordings and questionnaires and analyzed through identification of themes and patterns. The results indicated that some teachers and administrators believed brain based learning will not survive the No Child Left Behind initiatives, which forces teachers to focus on standardized testing. The data indicated that brain based learning is still a questionable practice and further empirical research is warranted. The case study often a holistic account of teacher and administrator perception of brain based learning and constructs meaning that assist future researchers to plan studies of these teaching methods.

## Conclusion

The investigator reviewed last five years of studies related to the topic brain based learning. From this it is understood that brain based learning focuses on concepts that create an opportunity to maximise attainment and retention of information. Also it can be applied to the learning process to understand the structure of the brain by considering the needs and styles of learners to evaluate and improve the course format and content delivery.

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