
A Study to Assess the Knowledge Regarding Brain-Based Teaching Method among Primary School Teachers with a View to Develop Self Instruction Module

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ABSTRACT

Introduction: Brain based teaching is designed to help the teachers recognise that teaching could be made fascinating to students by introducing innovative methods of teaching. Brain based teaching approach is one such method of teaching. This approach of teaching provides meaningful learning when the teacher understands how the brain learns naturally.

Methods: The research approach adopted in the present study was survey approach, and research design was descriptive research design. Purposive Non random sampling technique was used to select the sample for the study. The sample size was of 60 of primary school teachers. Data were collected by using structured knowledge questionnaire schedule through multiple choice questions. Analysis of the data was done using descriptive statistics as mean, standard deviation and inferential statistics as Chi- square test.

Result: The primary school teachers based on their knowledge regarding brain based teaching methods that 40 school teachers (66.66%) had low knowledge, 16 school teachers (26.66%) nurses had average knowledge and only 4 school teachers (06.66) had high knowledge. The mean percentage and standard deviation of specific areas of knowledge of school teachers regarding brain based teaching. The overall knowledge mean score 13.81 and SD = 4.216. There was no significant association between the demographic variables such as age, gender, religion, residential areas, education, teaching experiences and have you ever heard regarding brain based teaching method on knowledge scores of primary school teachers.

Keywords – Knowledge, Brain Based Teaching Method, Self Instruction Module, Teacher.

INTRODUCTION

BBT is a new methodology originated from brain based learning. This new discipline of learning is the result of various researches conducted by neuroscientists which is now entitled as educational neuroscience [1]. Educational neuroscience is an emerging field of science that transports the researchers in cognitive neuroscience, educational psychology, educational technology, and other related disciplines to explore the

interaction between biological process and education. It enhances learning by understanding the mental process of learning.

The blend of education and neuroscience has paved the way to challenging approaches of innovative teaching and learning. Brain based teaching is one such educational pedagogy that integrates neuroscience concepts in its syllabi and practices [2].

The new concept of learning focuses more on the structure and cognitive functions of brain. It emphasises on how the brain works and helps to understand the students learning and developing ability in classroom [3].

Brain based approach is a type of learning in accord with the way the brain is naturally designed to learn [4]. Brain based learning (BBL) focuses on how the brain learns to promote meaningful learning. It accepts the rules of brain and organizes the teaching according to these rules [5].

Brain based teaching approach is based on the theory of brain based learning. BBL is considered as one of the latest revolution in education [6]. The theory of BBL is collaborated from cognitive theory of learning where brain is given due importance and believe it has an incredible network of information processing as we learn things. The new theory advocates that the nature of cognition, the functioning of human brain, and the construction of knowledge walk hand in hand [7].

Numerous studies conducted in the field of neurology and cognitive science lead to the new shift of paradigm called brain based learning. In the infancy stage BBL was used to enhance teacher instruction. Later on BBL strategies were used to develop the students' ability to learn by considering their emotions during the process of learning. Jenson (2000) states BBL as "learning in accordance with the way the brain is naturally designed to learn". This new theory of learning is derived from brain theories developed with guiding principles of learning.

Brain based learning brings the learning system of brain forward. Greenleaf (2003) defines BBL as "an instruction which

takes into consideration how brain takes, processes, interprets information, makes connection, stores and remembers the messages". BBL is a brain friendly approach at the same time the theory can be implemented to any type of learner (Brue, 1999). Connell's (2009) findings also state that BBL is applicable to all regular education and special need students.

In normal method of teaching students sit frivolously in their classroom listening to the lecture given by the teacher. The lecturing is followed by the note taking from the blackboard. The notes of the concerned topic is then memorised by the students those who are good in it. Students are trained to be exam oriented. Information they gain from the school will not be retained for a long period as the context was taught in the typical traditional methodology.

Students' emotions like threat, boredom, stress, are not considered by the teacher. No activities are done to stimulate the brain. This type of learning affects the slow learners with poor academic performance. In order to overcome the situation, brain based teaching approach provides better platform for students to learn and understand the concept in a different method.

Brain based teaching approach is an approach where the principles and theory of brain based learning is followed. BBTA provides a meaningful learning by accepting the rules of how brain processes and organizes the instruction according to these rules of mind (Caine & Caine, 1994).

According to Caine & Caine meaningful learning occurs only when brain works in a unity while learning. Therefore Caine stresses the teachers to teach the students

by due consideration to brain. As BBTA is taught according to the principles and working of brain it is proved to be the best way of learning and boosting of academic performance by the findings under this area of research [8].

Brain-based learning focuses on how we learn with the help of brain. It embraces accepting the rules of brain processing, and structuring the teaching according to these rules for meaningful learning. It provides us to think at the stage of making decision.

When usual classroom teaching methodologies designed with homogenous learning style, brain-based teaching approach takes a holistic approach, where its principles and techniques are blended in teaching-learning process to make the learning meaningful with equal participation of the students.

Thereby the students are free from the daily lecturing classes. The purpose of the present study is to determine the impact of teaching process based on the techniques of brain-based learning with usual classroom teaching.

The investigator is also intended to find out whether BBTA makes similar contribution to academic achievement of students. Researchers have introduced this new paradigm of teaching, brain-based techniques in their classrooms, where they witnessed higher degree of progress in the academic achievement of students in various subjects [8].

OBJECTIVES OF THE STUDY

- 1) To assess the knowledge regarding Brain based teaching method among primary school teacher.
- 2) To find out the association between the knowledge regarding brain based

teaching method among primary school teacher with their socio-demographic variables

- 3) To develop self instruction module based on the learning needs of the primary school teacher regarding brain based teaching method

Operational Definition

- 1) **Assess:** It refers to examine the knowledge regarding brain based teaching method among primary school teachers.
- 2) **Knowledge:** It refers to correct response of primary school teachers to the question on knowledge regarding brain based teaching method among primary school teachers.
- 3) **Brain-based Teaching Method (BBTM):** The brain-based teaching approach is a teaching technique followed in the classroom by using the principles of brain-based learning and also the three fundamental elements namely relaxed alertness, orchestrated immersion, and active processing.
- 4) **Primary School Teachers:** The people who are qualified to teach children and are working in a school.
- 5) **Self instruction module:** It refers to the structured material intended to provide information regarding brain based teaching method among primary school teachers.

HYPOTHESIS

H1: There will be association between the knowledge score of primary school teachers regarding brain based teaching method with their selected socio-demographic variables.

Assumptions

- 1) The primary school teacher will be willing to participate in the study effectively.
- 2) The teachers will extend their co-operation in providing factual information.
- 3) Primary school teacher will have an interest to know about brain based teaching method.
- 4) Self instruction module will improve the knowledge of primary school teacher regarding brain based teaching method.

Delimitations

- 1) The study will only be limited to 60 primary school teachers.
- 2) Primary school teachers who are present at the time of data collection.

Therefore, the investigator felt that there is a need to enhance the knowledge of primary school teacher regarding brain based teaching method. So that primary school teachers will be able to teach in the classroom for the students to learning focuses more on the structure and cognitive functions of brain.

It emphasizes on how the brain works and helps to understand the students learning and developing ability in classroom.

MATERIALS AND METHODS

The research approach adopted in the present study was survey approach, and research design was descriptive research design.

Purposive Non random sampling technique was used to select the sample for the study. The sample size was of 60 of primary school teachers. Tool consists of two sections:

Section A: Consists of socio demographic data of the teachers.

Section B: The tool consists of 25 items regarding brain based teaching method.

The items was closed ended questions especially of multiple choice questions. The total score was 25. Each correct response carried out with one mark. The pilot study revealed the feasibility of the study.

Reliability of the tool was calculated by the test retest method. By using Karl Pearson's co-efficient of co relation method "r" value is obtained. [$r^1=0.91$]. It shows that the tool was highly reliable for the final study.

Data were collected by using structured knowledge questionnaire schedule through multiple choice questions. Ethical permission was obtained from the principal of Henderson Public School and Dasmesh public school for data collection. Analysis of the data was done using descriptive statistics as mean, standard deviation and inferential statistics as Chi-square test.

RESULTS

Section A: Analysis of data related to the Socio-Demographic variables

Section B: Analysis of data related to the knowledge regarding Brain based teaching method among primary school teacher.

Section C: Analysis of data related to the association between the knowledge regarding brain based teaching method among primary school teacher with their socio-demographic variables.

Table 1. Frequency and Percentage Distribution of Primary School Teachers by Their Socio Demographic Variables

N=60

Demographic Variables		Frequency(f)	Percentage (%)
Age(years)	21-30	22	36.66
	31-40	18	30.0
	41-50	12	20.0
	51 and above	08	13.33
Gender	Male	22	33.66
	Female	38	63.33
Religion	Hindu	18	30.0
	Sikh	32	53.33
	Muslim	04	06.66
	Christian	06	10.0
Residence	Urban	44	73.33
	Rural	16	26.66
Education	B.Ed.	34	56.66
	M.Ed.	16	26.66
	P.E.T.	02	3.33
	Any other	08	13.33
Teaching experience	Less than 5 years	28	46.66
	6-10 years	20	33.33
	11-15 years	08	13.33
	16 years and above	04	06.66
Have you ever heard regarding brain based teaching method	Yes	12	20.0
	No	48	80.0

- 1) In table 1, according age of the respondents 36.66% were between the age group of 21 to 30 years, 30% of respondents were between the age group of 31-40 Years, 20 % were between the age group of 41-50 Years, and 13.33% were in the age group of 51 years and above.
- 2) According to gender the school teachers 63.33% were female and 33.66% were males.
- 3) According to religion the respondents 30% were Hindu, 53.33% were Sikh, 06.66 were Muslim and 10% were Christian.
- 4) According area of residence 73.33% were residing in urban area and 26.66% were in the rural area.
- 5) Education of primary school teachers 56.66% were Bachelor in Education, 26.66% were Master in Education, 03.33% were Physical Education Teacher and 13.33% were others.
- 6) According to educational experiences of respondents 46.66% had less than 5 years of teaching experience, 33.33% had 6-10 years of teaching experience, 13.33% had 11-15 years of teaching experience and 06.66% had 16 years and above teaching experience.
- 7) According to have you ever heard about brain based teaching methods 80% were say No and 20% were yes.

Table 2. The Knowledge Levels of School Teachers were Categorized into Three Levels

Levels of Knowledge	Percentage (%)	Range of Score
High Knowledge	0-50	0-13
Average Knowledge	51-75	13-19
Low Knowledge	Above 75	20 - 25

Table 3. Frequency and Percentage Distribution of Level of Knowledge Regarding Brain Based Teaching Method among Primary School Teacher

N=60

Levels of Knowledge	Frequency	Percentage (%)
High Knowledge	4	06.66
Average Knowledge	16	26.66
Low Knowledge	40	66.66

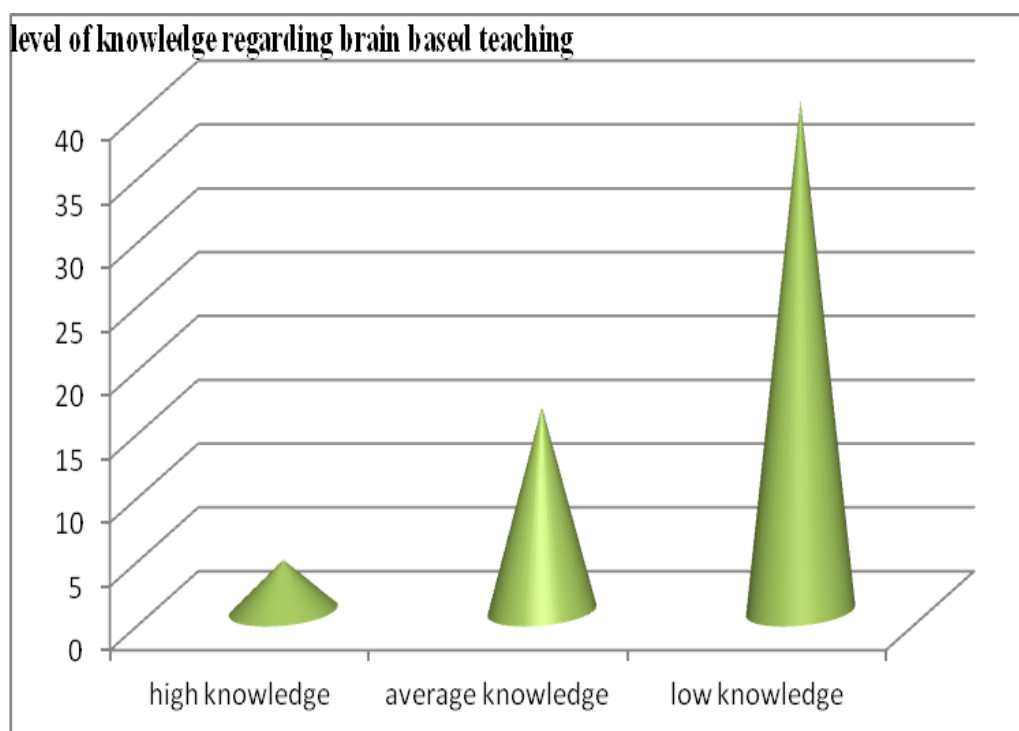


Fig. 1. Level of Knowledge Regarding Brain Based Teaching

Table 4. Mean and Standard Deviation of Knowledge Scores in Specific Areas of Brain Based Teaching Method among Primary School Teachers

Specific areas	Mean	SD
Overall	13.81	4.216
Meaning and definition of BBT	2.00	1.149
Principle of brain based teaching	1.36	.688
Interactive elements of BBT	4.86	1.798
Strategy and implication	2.23	1.198

Table 5. Association between Socio Demographic Variables of Primary School Teachers with Their Knowledge Scores Regarding Brain Based Teaching

N = 60

Variables	Calculated χ^2 value	P Value	Degree of freedom	Table Value	Association
Age in year	3.040	0.551	4	9.49	NS
Gender	1.690	0.429	2	5.99	NS
Religion	7.970	0.093	4	9.49	NS
Residential area	4.967	0.291	4	9.49	NS
Education	1.459	0.834	4	9.49	NS
Teaching Experiences	4.551	0.603	6	12.59	NS
Have you ever heard regarding brain based teaching method	11.372	0.078	6	12.59	NS

Table 2 describe based on knowledge score, the school teachers were categorised in to three groups. Teachers who scored below 13 (50%) were categorised in to low knowledge group, staff nurses who scored between 13-19 (51-75%) were categorised as average knowledge and teachers who scored above 20-25 (76%) were categorised in to high knowledge group.

Table 3 divided the primary school teachers based on their knowledge regarding brain based teaching methods. 40 school teachers (66.66%) had low knowledge, 16 school teachers (26.66%) nurses had average knowledge and only 4 school teachers (06.66) had high knowledge.

Table 4 describes mean percentage and standard deviation of specific areas of knowledge of school teachers regarding brain based teaching. The overall knowledge mean score 13.81 and SD = 4.216. The mean and standard deviation of respondent had mean score of 2.00 (S.D=1.149) regarding meaning and definition of BBT. The respondent had mean score 1.36 (S.D=.688) in regarding principle of BBT. With regard to interactive elements mean score had 4.86

(S.D=1.798), further the respondent had mean score of 2.23 (S.D=1.198) regarding Strategy and implication of brain based teaching method.

Table 5 describes that the calculated chi square values was less than the table values indicated that there was no significant association between the demographic variables such as age, gender, religion, residential areas, education, teaching experiences and have you ever heard regarding brain based teaching method on knowledge scores of primary school teachers. Hence the hypothesis (H1) has been rejected.

DISCUSSION

The primary school teachers based on their knowledge regarding brain based teaching methods. 40 school teachers (66.66%) had low knowledge, 16 school teachers (26.66%) nurses had average knowledge and only 4 school teachers (06.66) had high knowledge.

The mean percentage and standard deviation of specific areas of knowledge of school teachers regarding brain based teaching. The overall knowledge mean score 13.81 and SD = 4.216.

Association was done between demographic variables and post test level of knowledge score of primary school teacher by using chi-square (χ^2) test. The calculated chi square values was less than the table values indicated that there was no significant association between the demographic variables such as age, gender, religion, residential areas, education, teaching experiences and have you ever heard regarding brain based teaching method on knowledge scores of primary school teachers. Hence the hypothesis (H1) has been rejected.

CONCLUSION

The mean percentage and standard deviation of specific areas of knowledge of school teachers regarding brain based teaching. The overall knowledge mean score 13.81 and SD = 4.216. There was no significant association between the demographic variables such as age, gender, religion, residential areas, education, teaching experiences and have you ever heard regarding brain based teaching method on knowledge scores of primary school teachers.

In the study the investigator assess the knowledge of primary school teacher regarding brain based teaching model which will certainly help the students to clench the content matter easier than the normal method of teaching. Students don't have to sit indolently and listen to the lecture in brain based classroom. As the emotions of the students are given owed consideration, boredom threat and stress will be reduced which will result to a better academic performance.

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