

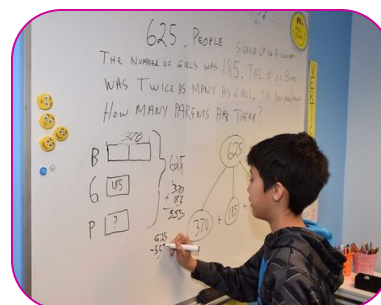


BRAIN-BASED LEARNING: A TOOL FOR MEANINGFUL LEARNING IN THE CLASSROOM

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ABSTRACT

This paper focus on brain based learning used as a tool for effective learning goals. In this present era, it is a central theme of argument in educational field. The concept of brain based learning deals with the subject of Educational Psychology which is the most important things in learning process. Brain based learning is influenced to developed cognitive thinking of learners as brain is the basic tool of learning process. It is related with the factors of environmental factors, social factors forchanging behavior of learners. Brain based learning occurred from birth to death of learners. Structure and function of the brain helps to developed ability of learning process to the children. Similarly meaningful learning can developed cognitive and emotional activities of the learners. So meaningful learning might not be happened without brain based learning or cognitive facilities of the brain. This paper exhibits how brain based learning developed learning process in the classroomeffectively.



KEYWORDS : Brain based learning , basic tool of learning process.

INTRODUCTION

Learning is relatively continuing products of experiences which come out as a result of the interaction between individual and environment. The concept of learning is vital importance in terms of explaining human behaviors. Brain-based learning deals with the concept of learning in a neuro-physiological context of learning. Brain is the basic factor in learning, so learning is affected by environmental factors, psychosocial qualities of the individual and chemical structure of the organism; and these interactions reflect on the process of learning.

Effective teachers never stop considering different ways of method of teaching to improve student achievement. Each teacher is different from each other from their learning style. Brain research has provided new knowledge about the many ways that humans learn. Brain-based learning has resulted from educators and researchers put on findings about brain research to guide teaching practice. Brain-based teaching learning has involved the implementation of designed a lesson plan principles and their impact on education before, during, and after each lesson.

Neuroscience is the scientific study of the brain which is dealing with the structure and function of the brain. Educationists started to comprehend about how the brain works. This understanding helps the teacher educators and student teachers how, when and why learning occurs from a psychological perspective.

BRAIN BASED LEARNING

Brain-based teaching strategies are effective for all students, regarding of learning challenges. According to Jensen (2008) Brain-based learning is a way of thinking about the learning process. It is not a panacea, nor is it the solution to all our problems. It is not a program, philosophy, or a recipe for teachers.

And it is not a trend or gimmick. It is, however, a set of principles and a base for knowledge and skills upon which we can make better decisions about the learning process.

The most recent trend of “brain-based learning” applies findings from cognitive neuroscience. The functions of memory are another central aspect of brain-based learning. Apart from the neuroscience research revealing that all these memory systems are interconnected and interactive (Caine & Caine, 2014, p.17), they contain various memory pathways that have to be used in balance and respected when information retrieve is required (Springer, 2008).

Brain-based learning puts a strong emphasis on physical exercise and movement in the classroom. For making awareness about the brain based learning, we should know the conceptual understanding related to the structure and function of the brain. The structure and function of the brain has discussed in the next chapter.

Principles for Brain Based Learning in the Classroom

Brain based learning is a different from traditional methods of teaching. Brain based learning emphasizes on meaningful learning in the place of rote learning. Brain based learning also developed activity based learning and learner centric approach.

Brain based learning principles show how brain based learning can be beneficial in the teaching learning process. The principles do need to be understood and apply in the classroom.

Caine and Caine (1991) have showed some principles of brain based learning. These are given in below:

- The brain is a parallel processor of learning.
- The brain based learning is a lifelong process.
- Learning engages the entire physiology.
- Helps to search for meaning in innate.
- Learning involves both focused attention and exterior perception.
- Learning always involves conscious and unconscious processes.

Structure and Function of the Brain

The brain is vital to human understanding and the ability to learn. It is the base of our mental facilities. The brain is divided into different areas which are called as lobes and each lobe is responsible for different activities or functions.

The Cerebrum

The Cerebrum is the largest part of the human brain and is made up of the cortex. Major regions of the cortex are responsible for the processing of our sensations. This is the largest part of the brain and is divided into the right and left hemispheres. The left hemisphere controls the right side of the body part and is usually responsible for speech and language functions. The right hemisphere controls the left side of the body part and is usually responsible for processing visual and spatial information, and other non-verbal skills. The two hemispheres are linked by bundles of nerve which allow communication between each side of the brain.

But there have myth about hemispheric brain based learning and teaching. The functional organization and functional differences among different brain is called as “hemispheric dominance” of the brain functioning. The most prevalent Neuromyths among teachers is the difference between the learners which results due to the dominance of one of the two hemispheres of the brain. According to this mistaken belief that students are either left-brained or right brained. Left-brain learners are more analytical and logical, whereas right-brain learners are more creative.

According to OECD, no specific evidence indeed, indicates a correlation between the degrees of creativity and the activity of the right hemisphere. Similarly, no scientific evidence validates the idea that

analysis and logic depend on the left hemisphere or that the left hemisphere is the special seat for arithmetic or reading. There is no scientific study which shows that adapting the teaching method to a student's dominant hemisphere is beneficial to the learner (Steve Masson, 2015; Jeremie Blanchette Sarrasin, 2015).

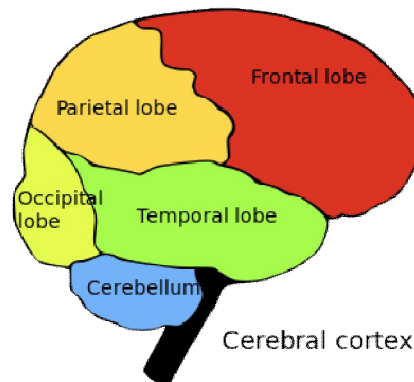


Figure. 1

Each hemisphere of the cerebrum is divided into the following lobes:

The Frontal Lobe is concerned in motor control, complex thoughts, relations, and social thinking.

The Parietal Lobe is use for all our perceptions.

The Occipital Lobe processes all visual input.

Temporal Lobe processes both auditory (hearing) and olfactory (smell) input.

The limbic system:

All sensory information is managed by limbic system. Limbic system refers as the brain emotional system. Humans are unable to receive sensory input from surrounding the world without associating emotions promptly.

Cerebellum

This area of the brain is responsible for Balance, Movement, Co-ordination, Spatial awareness.

Brain stem

This area is answerable for the heart rate, breathing, blood pressure reflexes.

All these function of the brain supported by neurons are helped to transmit information throughout the body.

Neocortex

As a human beings are privileged to have the ability to act willingly and consciously. We have the free will to make decision, concerning to think, remember and develop and actions which we want to take. We use our brain and nervous system to exercise voluntary control over our decisions as to eat, take a walk, or sit down and read a book and we control our muscles to carry out those choices. This is called as a voluntary nervous system. It is located in the part of the brain called the Neocortex.

The structure and function of Neuron

A neuron is a specialized cell, found in the brain, ganglia. Ganglia is nothing but it is a groups of neurons located outside the central nervous system. Neurons come in many different shapes and sizes, but they all have some common features. Practically all neurons have a cell body, an axon, and one or more dendrites.

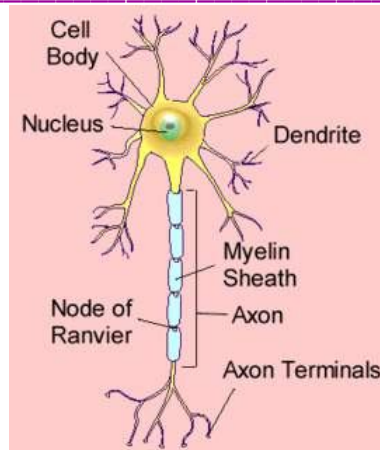


Figure 2: Basic Structure of Neuron

All neurons have three basic functions. These are to:

1. Receive signals or information.
2. Incorporate incoming signals.
3. Communicate signals to target cells or other neurons.

Like other cells neuron has a cell body called the **soma**. Various processes extend from the cell body. These include many short, branching processes known as dendrites and a separate process that is longer than the dendrites known as the axon. At the end of axon have axon terminal and each axon has knob at the end.

Neuron-to-neuron connections are made up into dendrites and cell bodies of other neurons. These connections are known as synapses. At most synapses and junctions, information is transmitted in the form of chemical messengers called neurotransmitters.

From the above function of neuron, it has understood that neuron have connected our whole part of the body and give response others part of body. So brain based learning is more important in teaching learning process which is allowed to give correct response in learning process.

MEANINGFUL LEARNING

The term of “meaningful learning” has become clear in science education through the work of the educational psychologist David Ausubel. As he suggests, in most contexts, meaningful learning is better than rote learning that meaningful learning serves as a kind for learning which has value in real classroom condition in multidisciplinary contexts.

Meaningful Learning engages students emotionally, socially, cognitively. Meaningful Learning promotes success. It increases emotional and cognitive growth of learner. Meaningful learning helps to develop curiosity and boosts the students to the joy of finding. It leads to self-actualization of the students.

The knowledge gained through meaningful learning relates to new learning situations. This type of learning stays with students throughout the lifespan. Meaningful learning is active, constructive, and lifelong learning. It allows students to be fully engaged in the learning process

Brain based learning: a tool for meaningful learning:

Meaningful learning teaches students important cognitive skills which are based on brain based learning. Brain based learning learner can use throughout their life. Cognitive skills also be develop through the brain based learning then students can evaluate, analyze, remember and make comparisons themselves. So Brain based learning use as a tool for meaningful which is the most effective way for students to engage in learning process.

Brain based learning is a relatively new idea and that requires educators and neuroscientists work together to create meaningful programs. Specialists in the fields of neuroscience, psychology, cognitive science, and education converge to improve teaching methods and academic programs.

Brain based learning is a connected with neurology and the science of education, where educational psychology plays an important role. Neuroeducation in the classroom is a scientific tool for educators as well as teachers, designed to help identify to academic failures and assimilates the main cognitive functions in children.

Brain based learning also is a constructivism approaches of teaching method whether the brain constructing learning process as finding and structuring knowledge by means of associating them with previous experiences and knowledge. According to constructivism, learning is an interior process that takes place in a person's mind and it is differ from individual to individual.

CONCLUSION

Educational neuroscience provides important neurological evidence to support the lifelong learning and confirms the wider benefits of learning, especially for ageing populations.

Cognitive functions are also developed by the brain based learning process. With the help of this learning process students or teachers can developed their behavior, attitude, activity etc.

Educational neuroscience is worked as multidisciplinary. It helps to develop curriculum so that the present curriculum is based on activity based, experience and learner centric curriculum.

Brain based learning is one of the most important way of teaching process who helps to change the curriculum. It is used as a psychological perspective of learning in teaching process. Teacher must be known about this method of teaching learning and then the learner can motivate and learn excellently.

So in this present era, teachers should be made aware about brain based learning use as a meaningful learning in teaching learning process and get clearness over Neuroscience in Education for a better classroom practice.

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