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# Structure and Functioning of Brain on Learning Process

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**Abstract---***This article shows the importance of knowing about the structure and functioning of the brain, how it behaves in the learning process in people, from the moment of conception, childhood and during the rest of the development of our lives. For many years, human behavior and its evolution in constant learning have studied, which have allowed us to determine the learning occurs and the different appropriate conditions for it to be meaningful.*

**Keywords---***brain, knowledge, learning, neurosciences.*

## **Introduction**

To achieve meaningful learning, it is necessary to know what the brain is and how it works and how learning occurs. In the process of creating life, the brain learns from the very stage of conception, where it begins its first learning, then at birth it begins a new illustration process that is associated with what is assimilated in the gestation process, and it is from here when a stage of adaptation and learning begins that the child stores in his memory, which allow him to develop and develop in his first years of life (Mendoza *et al.*, 2019).

Then, when formal learning begins, learning techniques, strategies, and methodologies play an important role in the development of the new knowledge that the child will acquire in his first academic training lessons. And as time progresses in its educational stage, it acquires knowledge and skills that will serve to be able to perform in the following years of study and academic-professional training. This document addresses some issues related to brain and learning, in order to better understand the wonderful world of learning, which, supported by neurosciences, shows us how informal and formal learning is carried out (Mahendra, 2016).

## **Materials and Methods**

A bibliographic investigation was carried out on the brain and learning topics, where different authors contributed their ideas regarding the research topic. The inductive and deductive method was also used to verify that the brain carries out its learning from the moment of conception and continues for the duration of its life.

## Results and Discussions

### *The brain: our learning organ*

Then a brief analysis of the brain from an anatomical and functional point of view. The author, [Arias \(2011\)](#), refers that the brain is another organ of the human body that is composed of cells and one of its main are neurons, which need a process of myelination or coating of neuronal fibers, which They allow efficient communication between neurons, which is responsible for brain growth, which occurs faster in childhood.

The myelin-coated axon allows neuronal messages to travel and dendrites allow communication, from the segregation of neurotransmitters between one neuron and another.

### *Energy for learning*

It is also important to know where the brain obtains energy to learn, what is its primary source, and who provide the necessary nutrients for the learning process:

The main source of energy in the brain is blood, which must contain the necessary nutrients. (Glucose, Proteins, Trace Elements, and Oxygen) in the 36 liters of blood you receive per hour, therefore a correct diet will contribute to optimal functioning and better learning, another important source is water since dehydration would cause a weakening of the brain and also of learning ([Jensen, 2008](#); [Vasquez et al., 2019](#)).

In this author's quote, it can be analyzed that a correct diet will help learning and good functioning of the brain because through the blood the necessary nutrients are provided so that the brain is in optimal operating conditions.

### *When does learning begin?*

The author refers to the moment that learning begins in the human being, [Lagos \(2014\)](#), states that: learning begins before birth, and many things of great importance that the human being learns, it does in the womb of the mother, that the experiences that the fetus lives inside her mother's womb will define in a large number the personality that will govern her in the future.

As an example, it can be cited that it has been shown that babies at birth prefer smells and flavors of the food that the mother fed during pregnancy. From pregnancy, the sound that babies constantly hear is that of the mother, and everything that it can transmit to her, so it is not recommended to reduce the level of stress in pregnancy, because this produces situations of tension in the future baby at birth.

Being relevant what this author says related to the beginning of learning in the human being, from her mother's womb as she develops during the 9 months, she learns significantly and keeps in her brain important and relevant information that will then be Compare and use when born when communicating with the outside world.

### *Learning from birth*

Next, it is analyzed what happens to the child after he is born in his learning process:

From birth to the first 3 years of life, the child's brain is very active in its learning process, attentive to significant stimuli and interactions From: Language, touch, eye contact, exploration and play, the more information you get from these, the more easily you will learn to decipher language patterns, which will allow you to make yourself understood with the world around you; thus developing cognitive, emotional and social skills that prepare him for his first years of formal education and his future life relating to others ([Foundation, Bernard Van Leer, 2013](#)).

This section states that it is very important to take into account what the child learns during his first three years of life because at this time he must form the basis of his learning in several aspects so that when he begins his regular academic education he can Develop your other capabilities successfully.

### *How do we learn?*

Each stimulation, experience or behavior, allows a new learning that causes this to be modified with a new knowledge, the author [Jensen \(2008\)](#), states, that when some type of stimulus reaches the brain, this triggers a great process, which can be internal or external, then this stimulus is distributed at various levels, and then leads to the

formation of a potential memory. Applied to educational practice, the stimulus in learning must always be very relevant, since the brain is always doing something that it already knows, or that it will know only recently, making the neuronal pathways become increasingly effective.

To understand this theory that the author affirms, it can be added that learning begins with any stimulus that reaches the brain, which triggers a series of processes which will produce a new knowledge that is stored in memory, the same as it will be available for use at any time. This type of stimulation can be different for example, listen to music, watch a movie, visit a new place, making new friends, solve a problem, etc.

### *Relationship between learning and memory*

*Learning is a process that modifies existing knowledge and therefore its behavioral and reasoning abilities:*

When we talk about Learning and Memory, we refer to two processes that are closely related and refers to two moments in a series of processes through which the brain manages and produces information provided by the senses. This process modifies the state of the person's knowledge and, consequently, their behavioral abilities, in other words: as new information is incorporated, the state of memory is modified (Aguilar, 2001; Suarez *et al.*, 2019).

In this way, the author states that learning begins when the senses capture the information, they go to memory to modify the state of it, which allows it to act with this new knowledge according to what is required at the time timely.

### *Learning and creativity*

There are many authors who affirm that learning must have constant creativity, to put into practice multiple intelligences. The author Elisondo (2016), states that this topic has been investigated and that creativity is the attribute of a select few, taking the field of arts as an example; however research has shown that creativity is a characteristic of normal cognition and that it is applicable in many areas of knowledge, therefore we can all be creative in any of the actions we develop daily, as long as it applies to the following: that creativity is related to the ability to generate new ideas, appropriate and of high quality.

From the author's analysis, it can be said that we are all capable of being creative and that this is a very important factor in learning, generating new ideas appropriate to the extent that formal learning is developed in Table 1, you can observe an analysis of some *authors of the subject treated*.

### *Cognitive abilities*

On cognitive skills Gómez (2004), refers to the skills that as a complex process system of thought encompasses from stimulus acquisition, memory storage and subsequent use, therefore refers to; the operations that are used to obtain, accumulate and their subsequent recovery of knowledge, and be used where and when they are needed. Among these operations we have: (Attention = Exploration), (Comprehension = Idea Collection), (Elaboration = analogies), (Memorization / Recovery = Coding / Generation of responses).

### *Genetic inheritance and environment*

The human being develops by two factors, the genetic and the environment. The interaction between the biological and the experience means that the brain can be modulated from an early age. On the one hand there is the influence of genes inherited from parents, (physical traits, temperament, interaction, behavior). On the other hand the environment in which it develops with the different experiences and stimuli lived. This neurodevelopment process is fundamental because it influences the initial construction of a cerebral architecture, which will influence: behavior, learning, and skills. Studies have shown that neither influences more than the other, both are fundamental and deserve special attention to provide concrete actions that allow developing opportunities for human beings who are constantly learning (Campos, 2014; Tuarez *et al.*, 2019).

### *Neuropsychological intervention*

It is a process that is applied in the school environment to diagnose and apply neuropsychological intervention programs, Lobo (2013), states: these programs require a series of basic guidelines, which are applied in cognitive rehabilitation to ensure their effectiveness. It is also important to consider cognitive development and its

correspondence with brain maturation. All brain functions are very important in the learning process, so the neuropsychological intervention must use theoretical models, instruments and programs that allow you to evaluate from the most basic processes to the most complex and learning alterations.

Table 1  
Analy

Author	Theme	Year	Result
Arias, Liliana	<i>Module: Brain and Learning.</i>	2011	The organ of our body that performs all learning throughout life has called the brain, which performs it before birth and after birth for the duration of life, through cells called neurons.
Jensen, Erick	Brain and Learning. Educational competencies and implications.	2008	Being the brain the most important organ of our body needs energy for its functioning and learning, therefore we must provide adequate nutrients so that it can function well and perform all the neuronal processes for which it has created.
Lagos, Alejandra	Learning begins from gestation	2014	It is stated that learning begins from the moment of conception and that here a pattern is formed with information that the child brings at birth, which will relate it to his first experiences of life.
Fundación, Bernard Van Leer	<i>Learning begins early</i>	2013	As the child comes into his brain with information loaded during pregnancy, the first thing he does is relate that information to the outside world, and then with the different interactions he makes, he goes increasing their learning and obtaining meaningful information.
Aguilar, L	<i>Learning and Memory.</i>	2001	Well, as it has said that learning begins in pregnancy, the child already has significant information in his memory, since his new learning not start from nothing, there will always be a starting point for a new learning, that little by little it is stored in its memory, to use it in a new knowledge.
Elisondo, Romina	Creativity as an educational perspective	2016	In this case, the author states that we can all be creative and this ability has given by the way, in which we develop new, high quality and meaningful ideas.
Gómez, José	Cognitive Neuroscience and Education	2004	On cognitive skills, this author states that they are the operations that the brain performs to capture, accumulate and subsequent use of information.
Campos, Ana Lucia	The contributions of neuroscience to the attention and education of early childhood.	2014	On genetics and the environment, this author states that: The interaction between the biological and daily experience, allow the brain to be molded from an early age.
Lobo, Martin Pilar	Processes and programs of educational neuropsychology.	2013	Educational neuropsychology is a process that has used to diagnose and apply for neuropsychological intervention programs, to rehabilitate learning disorders.

After the investigation carried out, it was known that the brain is one of the first parts of the human body that develops and learns from conception and that once the child is born he continues his learning, storing in his memory the significant information that goes to him To serve for another learning. There are also other factors that affect learning, such as food and good nutrition that we provide to our brain through the bloodstream.

To talk about the brain and learning is to adhere to a wonderful world of science, discover how the brain is structured and how each of these parts acts in the process of constant learning.

Knowing that the brain is connected to each of the motor, visual and auditory functions, and that executive functions can be generated that allow differentiating and acting correctly when new learning occurs in the brain.

Within the educational field, it is necessary to know about all these functions that the brain performs because in this way you can understand why in the classroom you have different types of students and that not everyone learns in the same way or at the same pace.

On the other hand, genetics and the environment are two important factors when it comes to shaping the brain at an early age, and that cognitive skills are that set of activities that the brain performs to capture, store and its subsequent recovery of information.

## Conclusion

The diversity of students with different intellectual coefficients, gives the possibility to apply the appropriate techniques, strategies, and methodologies, with the right tools, so that you can have meaningful learning, you have to know better the human being and the teacher know the students to better understand their performance in classes and the level of learning according to the case.



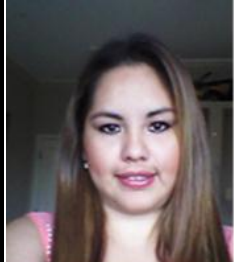
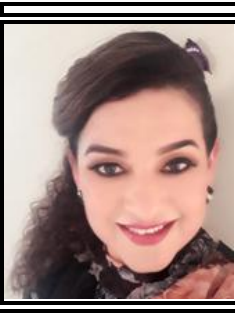
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