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English 111/ENF 3

Brain Development

Biological Phases of the Human Brain

The brain loves to learn and wants to learn. It goes through many different phases and stages to learn and grow. The Natural Human Learning Process is the biological description of what the brain does to go through these phases and stages to learn (Smilkstein). The biological process is an in-depth description of what the brain does and need to function and grow. The brain’s ability to learn and grow is important because it creates endorphins which are happy and confident feelings. The brain’s ability to learn, helps with emotions and feelings that will be encountered throughout life. Continuously learning, helps the brain to properly function and create the hormones needed that affects emotions.

During the brain’s biological process, humans learn in five or six stages of the research of Dr. Rita Smilkstein that she calls the Natural Human Learning Process (NHLP) and is true of how I learned how to do hair. The first step is motivation. I had been in the corporate world for fifteen years, and I was looking for something else to do as work for myself to make extra money. It would give me a little more financial stability in my life. The second step is beginning to practice, and I like working with my hands and being more creative and felt like hair was a way for me to express it. Growing up with five sisters, and doing hair as one of the oldest, I was responsible for the hair care of my younger sisters. As my younger sisters got older, they did hair professionally, so I started practicing from them and learning to do everything. I found free volunteers, observed from my sisters and asked a lot of questions. The third step is advanced practice. I went to hair shows for classes and gained clientele and continued to practice every day for months. The fourth step is skillfulness, and I started making a lot of money and being requested by people and felt very confident about what I achieved. It made me want to learn more, take more classes, and I really felt good. The fifth step is refinement. I got so confident, it made me want to learn things that were not being offered by other stylists in the salon that set me apart as being the only one that could do it. It put me in another category from other stylists and is challenging. The sixth step is mastery and I now apprentice other students and teach. I opened my own salon for the past six years and it has been very rewarding being a business owner.

I learned a completely new profession. Dr. Smilkstein says that we learn through these stages because learning is a biological process in which brain cells grow and develop. The brain is made up of tiny brain cells called neurons. The best way to describe a neuron is in similarity to a tree. Picture a tree standing from the ground, and all of the parts that make up a tree, that is what a neuron looks like in the brain. The neuron starts out with a cell body that is similar to the heartwood of a tree, at the top of the tree where all the branches and limbs meet. The cell body, then grows out dendrites, which looks like tree branches and stems that extend out of the heartwood, and eventually they connect with other brain cells and carry information into the cell body. The cell body, then grows a stem that is called an axon, which looks like a tree trunk that grows out of the ground. The axon is protected by the myelin sheath, which looks like bark on a tree that protects the tree trunk, like the skin. The axon is connected to the axon terminals which look like tree roots that grow underground through the soil. The axon terminal bulb receives the information and sent out electrochemical messages to dendrites and other neurons, much like the roots provide water and nutrients through the tree for it to grow, and this is how the brain learns and grows when learning new information (Smilkstein).

 When the brain learns and grows from neuron to neuron, it is due to a process called synaptic firing. Synaptic firing is very similar to how a spark plug fires in a car engine. The connection between one neuron to another neuron is called a synaptic gap or synapses. The spark plug and the piston of a car engine work together as fuel and air is combined. When the piston is dead center or at its fullest reach to the spark plug, the spark plug then fires the engine up to start. Like the synaptic firing, the spark plug and the piston don’t actually touch. The synaptic gap contains synaptic vesicles that include neurotransmitters. When electrical - chemical impulses pass through the axon, similar to the conductivity of a spark plug when electricity passes through it, the neurotransmitters “spark” across the synapse. The neurotransmitters are like a spark in a plug, they send power to other parts. The receptor on the axon terminal receives the neurotransmitters or electrical messages and sends them to other neurons and the resulting synaptic firing causes dendrites to grow on the nearby neuron. The plug sparks and sends power to other parts of the engine in a car. Dendrites are created by learning and gaining knowledge and skill, like a spark plug would help all the parts of an engine to work and move a vehicle. Depending on the emotions, the brain produces certain chemicals or hormones that flow through the synaptic gaps. Endorphins are like fuel, they are hormones created in the body because of good feelings, such as being happy, enjoyment, and confidence. Endorphins can make the synapse work fast and well growing dendrites from learning. Norepinephrine is a hormone the body produces due to bad feelings, such as anxiety, fear, or stress, which shuts down the synapses and makes them work slowly or not at all. Synaptic firing is controlled by the emotions being felt, and controlling what the brain is learning or doing.

Understanding how emotions play a major role in controlling the ability to learn will help to guide and keep control of thoughts and making good decisions in everyday life. Being in a happy emotional state produces endorphins and creates good feelings which creates synaptic firing and learning and further brain growth. Having and making the decision to control stress, which creates norepinephrine or bad feelings that hinders and stops synaptic firing and brain growth, is beneficial to living a prosperous and healthy life. Through these emotions, controlling what the brain is doing and deciding on whether or not to let emotions control how the brain functions.

There were specific times in my life that I let emotions, such as stress take over and it was responsible for keeping me from learning and growing and being confident in myself. One of the specific times that emotions kept me from learning and growing is when I had to take the exam to get my cosmetology license. Someone else that took the test told me that they had failed it twice. It made me extremely nervous, I did not think that I could pass it. The day that I scheduled to take the test, I went into the testing center feeling extremely stressed out. I remember when the attendant told me to sit down, she started the test with a timer staring at me, counting down. Every question I had to answer had the clock on it, and I only had a certain amount of time to complete the exam with a passing score. I did not feel confident, and I took too long to answer the questions and did not get through the entire test. The time clock put such a toll on me that I ended up having to come back and retake the test, due to over analyzing the questions and wasting a lot of time. I was not able to receive my license because of the stress that I felt trying to pass this exam.

Having dealt with that experience, I realized that to keep stress out of my life, I need to not let other people influence how I should feel about something and get my own experience. I should have put the comment out of my mind. If I had just relaxed and believed that I knew what I needed to know, I would’ve passed the first time. I will use this knowledge this semester to learn how to be calm and relax through stressful situations like my math tests. Going in with a confident attitude helps me to recall how to work out the problems and say to myself that “I know how to do this, just concentrate.” I need to tell myself that this is positive, I’m learning and growing and not to be so scared of this process and things I’m not familiar with. I am used to taking online classes, and I was a little afraid of having to be in class with people and be accountable in person. I had almost let it begin to stress me until I learned this information on how I should learn how to control my emotions.

The brain’s natural learning ability is a biological process that helps to make better decisions when it comes to letting emotions affect learning. Find ways to continuously learn and grow to create stronger and healthier neurons. Be able to control emotions in a way to stimulate growth and not hinder it. The Natural Human Learning Process is a great way to promote happiness and successful completion of life goals (Smilkstein).

Works Cited

Smilkstein, Rita. *We're Born To Learn: Using the Brain's Natural Learning Process to Create Today's Curriculum.* Thousand Oaks, Cal.: Corwin Press, 2003. Print.