



Neuroeducation and emotional intelligence

La neuroeducación y la inteligencia emocional

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Abstract

Several studies have shown the importance of an emotional intelligence that can be even more important than traditional intelligence, so the way to develop and increase this intelligence has become essential, and a fundamental part to optimize this is through education or teaching similar to how we acquire knowledge and improve our traditional intelligence. Neuroeducation has contributed a lot on this type of topics and involves all the knowledge that is known today about how our brain works and how we can take advantage of this to improve our quality of life, not only personal but also our work environment. This article shows the importance of the relationship between education and emotional growth necessary to generate advantages in students who have an integrated education. It shows how learning based on emotions improves the results obtained in the acquisition of knowledge and social learning, and how it creates the basis for conflict resolution, empathy and even an integrated development in the way of reacting and developing in adult and professional life. Additionally, it proposes options for teachers to involve this knowledge in the teaching environment such as the classroom.

Keywords: Neuroeducation, emotional stability, self-esteem, learning, teachers, plasticity, neuroscience.

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Resumen

Varios estudios que se han realizado han arrojado la importancia de una inteligencia emocional que puede ser incluso más importante que la inteligencia tradicional, por lo que la forma de desarrollar y aumentar esta inteligencia se ha vuelto esencial, y una parte fundamental para optimizar esto es mediante la educación o la enseñanza similar a como adquirimos conocimientos y mejoramos nuestra inteligencia tradicional. La neuroeducación ha aportado mucho sobre este tipo de temas e involucra todos los conocimientos que hoy en día se sabe sobre el funcionamiento de nuestro cerebro y cómo podemos tomar ventaja de esto para mejorar nuestra calidad de vida, no solamente personal sino también nuestro entorno laboral. En este artículo se muestra la importancia de la relación entre la educación y crecimiento emocional necesario para generar ventajas en los estudiantes que tenga una enseñanza íntegra. Se muestra como un aprendizaje basado en emociones mejora los resultados obtenidos en la adquisición de conocimientos y aprendizaje social, y como se crean bases para resolución de conflictos, empatía e incluso un desarrollo íntegro en la manera de reaccionar y desenvolverse en la vida adulta y profesional. Adicionalmente propone opciones para docentes de involucrar estos conocimientos en el ambiente de enseñanza como las aulas de clase.

Palabras clave: Neuroeducación, estabilidad emocional, autoestima, aprendizaje, docentes, plasticidad, neurociencia.

Introduction

The study of the brain in recent years has generated too much information that supports the various sciences that are related to it and education is no exception.

Education takes into account the different fields involved in the teaching process. In this case it focuses on a related aspect, emotion and its management in learning.

As mentioned by Dr. Fuster (2022) in several interviews, the care of the heart helps us to have a longer life and the care of the brain provides quality of life; therefore, the care of the brain is essential and

nowadays the quality of information obtained from studies and research has improved, several neuroscientists have described the importance of studies and even more related to the way of learning and teaching.

One of the main sciences based on this relationship is neuroeducation, which seeks to improve teaching methods based on the functioning of our brain.

One of the most important points within teaching are emotions, important points of how to call the attention of students, as well as improving the curiosity to learn new things, are the main part to improve learning.

This article presents the importance of education based on emotions, how teaching improves based on a more solid emotional intelligence. From the importance of learning and acting with emotional intelligence, as well as the relationship that neuroeducation has in the teaching methodology and creating an active learning at different levels of education. The more knowledge we have the more in control we can be, everything we can learn gives us security at a general level, a learning based on emotions becomes more meaningful, that is to say, we learn skills that can be applied to different situations.

Within the studies that have been published, neuroscience provides much about parts of the brain that are responsible for emotions such as the amygdala that determines certain reactions such as not feeling safe, for example, it is mentioned that the brain is placed in reptilian mode, that is, it is placed in survival mode and in that state nothing can be learned. For example, stress hormones released by emotional experiences influence people's memory and this influence is measured by the amygdala. (Silva, 2008).

Specific areas such as the prefrontal cortex and the nucleus of the amygdala are related to emotions, emotional memory, influence on tension and emotion perception, social behavior and emotional regulation as well. (Fernandez, Dufey, & Mourgues, 2007).. The total emotional maturity occurs in the frontal lobe this specific part of the brain that is estimated to be at 25 years of age which is when it finishes forming, here are formed the executive functions of the brain as short-term memory, impulse control, as well as the ability to concentrate and the amygdala stimulates executive functions, therefore when

teaching if we stimulate these parts of the brain we create a meaningful teaching to achieve a motivation of something I like and so I can pass it in the long term. (How to teach with neuroscience, 2022)

Methodology

In this article a descriptive and inductive method has been used to collect information on the variables presented, i.e. based on the different concepts and cases that have been written.

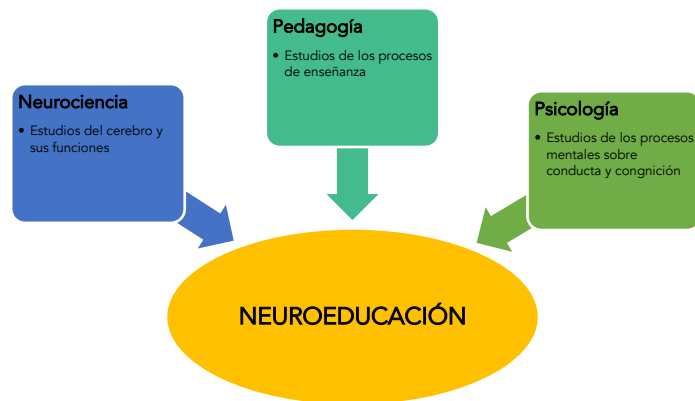
In the research it is possible to review the new concepts generated from research on the brain and the sciences that have been generated a few years ago, such as neuroeducation, or neurosciences. Most of the concepts explained are related to emotional intelligence and the importance of involving it in day-to-day education to generate meaningful learning at all levels.

Emotional intelligence is linked to personal growth that must be instilled from an early age and neuroeducation bases part of this knowledge from the triune brain to the different teaching methods, and how teachers can use this information and tools for different teaching methodologies.

Results

One of the specialties that neuroscience has shown is the relationship with education, Dr. Francisco Mora in neuroscience mentions that only humanity can transmit humanity, so teachers are essential in our lives, and neuroeducation bases its training in understanding the different areas of the brain that help meaningful learning, how to stimulate or prevent emotions such as fear and stress within the classroom and create positive environments for teaching, so the teacher becomes a fundamental part of this relationship. In neuroeducation we can see several sciences that are related to contribute to the improvement of education with projects that have been demonstrated and linked to the learning process.

Figure 1. Neuroeducation and related sciences



The sciences of psychology, pedagogy and neurosciences generate the studies on neuroeducation showing how from the different fields we achieve an improvement in the concept of education especially in the teaching methodology and the basic concepts to optimize that these knowledge or concepts last and can be applied in different future situations. Some of the main points that neuroeducation mentions are feedback, early learning and multidisciplinary learning strategies.

For example when talking about learning from error, the relationship with positive feedback is mentioned, which within the classroom should have a priority, how do you learn if you do not make mistakes or if you do not really analyze if you made a mistake, why you made a mistake and adjust your thinking, attention or memory which are more important than giving a correct answer at the end. (Tokuhamaspinosa, 2011)

That there is an interaction between the students and the teacher creating an environment of answers and questions focused on the topics to be discussed, emphasizing that there is curiosity and the desire to know about it, varying learning styles on the subject, different activities and resources or materials, paying special attention to the approach of repetition and practice, shows a significant advance in the application of this knowledge in the future.

Several strategies can be linked in classrooms to achieve this objective such as:

- Practicing active listening
- Encouraging participation rather than perfection
- Seeking to relieve general stress

Some of the activities that can be done in the classroom are to tell jokes, stimulate curiosity, let them ask questions and participate in speeches or debates. An important point is to let positive mistakes exist, that is, constructive learning that can be learned from failures or mistakes in order to improve.

Early childhood education

Who we are in adulthood is usually what we learned in our childhood and even more so in the first years of life. What we live from 3 to 6 years old is fundamental to how we will be as adults because since we are small the first words we hear will be part of the synaptogenesis which are the neuronal connections in our development that occurs mostly in the first years of life, so the synapses that are developed at this stage are permanent, that is, they will be the precedent of future connections, generating many of the behaviors that are involved in the development of the environment.

Within the first years of life, connections can be created that will form precedents in values, skills and habits valuable for life, so being accompanied from birth by what is often called the caregiver is essential.

If you want to have brain strengths in adulthood the form of integration at an early age is a priority, the recently created Serve and Return project mentioned above explains the importance of these activities.

Serve and Return shows that the interaction between caregiver and child builds strong brains, it is mentioned in the project that the quality of the relationship between caregiver and child has an impact on emotional regulation and stress sensitization, positive relationships help children learn to control their emotions. Recent research shows that the relationship mentioned alters the expression of genes that are responsible for regulating emotions and coping with stress through an epigenetic change, so early age experiences can produce biological changes in brains and bodies and that these changes are long-lasting in behavior. (<https://www.albertafamilywellness.org/>, 2023).

Emotional intelligence

As mentioned above, emotion is a fundamental part of learning, most of the time you only learn what you really love, and if you place emotions in the teaching method you will generate that interest in learning. The management of emotions is part of emotional intelligence, that is, the ability of the mind to guide our actions and thoughts.

Emotional intelligence is defined as "the ability to accurately perceive, appraise, and express emotion; the ability to access and/or generate feelings when facilitating thoughts; the ability to understand emotion and emotional awareness; and the ability to regulate emotions to promote emotional and intellectual growth". is referred to as a "thinker with a heart that perceives, understands and manages social relationships" (Salovey, 1990). (Salovey, 1990)

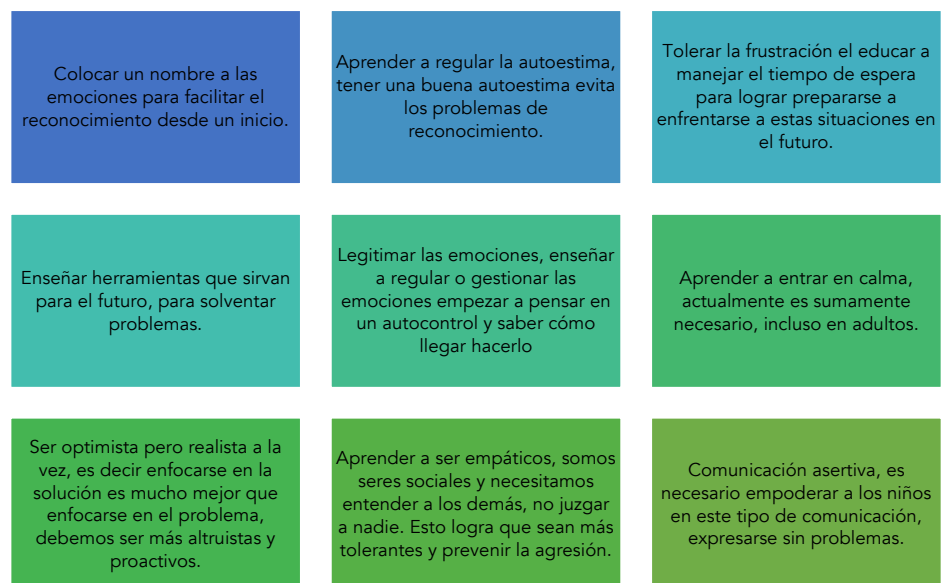
Emotions have different levels of intensity and it is necessary to identify them, to create from childhood this stimulus to learn to manage them and that they last to adulthood, and both reactions to problems, different good or bad situations and social encounters will be much easier to carry or to place them in favor. It can be said that at different levels of emotions a better assimilation is achieved for example you are quite angry or just a little, what level has the emotion helps to know how to manage it.

Dr. Valentín Fuster, a cardiologist and pioneer in the prevention and solidification of good habits, mentions that from the age of 3 years old, the best eating and emotional habits can be regulated and it is precisely at this age that they can be self-regulated, i.e. identify

emotions and manage to act on them. After the age of 6 years old, these options are not impossible, but he mentions that a greater commitment to change is needed.

At an early age it is important to start developing emotional intelligence, some key points to develop in children the recognition of emotions and emotional intelligence according to several psychologists are:

Figure 2. Keys to teaching emotional intelligence



Something significant that should be taken into account from an early age is that it is necessary to respect individuality, not to buy and give limits and rules, so that not only in the area of education, knowledge can be cemented, but also to create values for the future.

When individuality is respected we generate an increase in self-esteem since childhood, which in adolescence already begins to be a determinant for the success or failure of the actions performed, among several of the studies that have been reviewed there is one determinant on adolescents is that low self-esteem causes problems such as anxiety, insecurity, fear of the future, a poor view of their body image and obviously poor academic performance. (Vernieri, 2006).

At adulthood one of the priorities is to generate a personal maturity, if emotional intelligence is developed as cognitive intelligence can achieve a comprehensive development, at Stanford University in California United States Professor Sapolsky (2008) has established that the IQ that is studied mostly only represents 20% of the total academic result and 80% depends on other factors such as:

- Recognizing emotions and knowing how to manage them
- Recognizing Emotional Intelligence
- Use the existing potential, look for your talent
- Having resilient empathy
- Create positive social bonds.

For Dr. Valentín Fuster (2013) personal maturity can also be shown in the 4T rule he mentions:

Time for reflection: At least 15 minutes to think about the objectives, goals and actions you want to take.

Talent: It is necessary to invest and focus on the talent you have.

Conveying positivity - Communicating with actions and language.

Tutoring: That is, transmitting and educating.

Dr. Fuster also says that how you reflect to the world your self-esteem and motivation can be summed up in the 4As:

Positive attitude - do not focus on the negative but on the positive things, see the solutions.

Accept who you are: Know that you do not have the same conditions or talents as others, learn that you are unique and accept and love yourself as you are.

Authenticity: Knowing that you must be the same all the time, maintaining a homogeneity in your life, actions and thoughts.

Altruism - it has been proven that people are happier when they give something than when they receive it.

Emotional intelligence is linked to learning, teachers have to be a fundamental part to improve not only cognitive intelligence but to work and develop emotional intelligence in students, so teaching with motivation and emotions generates a great change Francisco Mora

mentions "The fundamental contribution of Neuroscience lies in making all teachers see that the gateway to knowledge is emotion. And that it is with emotion as it awakens curiosity from which follows the automatic opening of the windows of attention, which sets in motion the neural mechanisms of learning and memory" (Mora, 2015)

The teacher to be able to teach his knowledge has to know how to do it and how to reach all students, there are several studies of methodologies and strategies that can be used, but it cannot be said that they are good or bad strategies, the only thing that can be seen is if that strategy is adapted to the situation of the group of students or even to each student, something very important is to mention that the teacher to teach knowledge and emotions has to know both concepts as it is taught with emotion or how to teach to manage emotions if the teacher does not know how to manage his emotions.

It must be taken into account that the strategies will vary for each group of students or even for the topic to be taught, teachers must be ready to be able to modify the strategy, look for evaluation options and even for the development of the class. Strategies ultimately have a lot to do with the emotional intelligence, the level of motivation and the attitudes of the teacher and the group of students. The following example can be an application option to identify the best strategies:

Figure 3 Learning strategies review process.



Teachers are the basis to start creating a good emotional development and learning strategies are essential to start teaching with emotion, for this it is necessary to have an excellent observation

of the group if you pay attention to the different options that exist of methodologies and strategies can implement the correct one.

Conclusions

The advances that have been made in the areas of neuroscience have contributed a great deal to education, creating methodologies, experiences and contributions to improve the way we teach and learn. From an early age all we do is learn from the environment, and apply what we see and hear in our daily lives. Educational institutions at all levels have been gradually adapting this new information in their teaching processes, improving today the way of learning and teaching, it should be noted that it is still difficult to create some changes within institutions and teachers because they are rooted methods that have been practiced for many years and change a habit is sometimes very difficult, but if the benefits of these changes are made known to the community in general, whether students, parents, authorities and society, it will be much easier to implement them, And today it is essential that they benefit from all this new knowledge that has been provided since they have created a much broader scheme of the educational process and the different knowledge of the brain from children, adolescents and adults showing their particularities at each stage and how we can take advantage of each one to improve this process since we can train and educate the brain to create solid foundations in the use of emotions improving intelligence and the way of response in the development of operations throughout life.

The development of emotional intelligence in the first years of life is essential for its management in adulthood, creating a growth mindset, respecting their individuality as well as developing self-esteem day by day will generate strengths to later solve problems or conflicts of any kind. Improving the way of teaching based on promoting emotional development means teaching emotions experientially and not cognitively to generate an impact on the personality and the way of relating, creating this change by placing emotion in learning develops social skills in the student, reduces antisocial behaviors, reduces future addictions, increases positive self-esteem and self-image,

improves academic success as well as physical and mental health. With all this background, implementing emotions in the teaching process provides many benefits and improves the ability to learn, neuroeducation has created a solid foundation to improve education and create meaningful learning.

Reference

How to teach with neuroscience (2022). Madrid: Ediciones Roble, S.L.

Fernandez, A. M., Dufey, M., & Mourgues, C. (2007). Emotion expression and recognition: a meeting point. *Revista Chilena de Neuropsicología*, 8-20.

Fuster, V. (2013). *El círculo de la motivación*. Grupo Planeta.

<https://www.albertafamilywellness.org/>. (2023).

Mora, F. (March 08, 2015). Emotion is the energy that moves the world. (c. I. Let's change the world, Interviewer).

Salovey, P. & (1990). *Emotional intelligence. Imagination, cognition and personality*.

Silva, J. R. (2008). *Functional neuroanatomy of emotions*. E. Labos, A. Slachevsky, P. Fuentes, F. Manes. Treatise on neuropsychology and clinical neuropsychiatry.

Tokuhamma-Espinosa, T. (2011). *The brain, emotions and decision making*.

Vernieri, M. J. (2006). *Adolescence and self-esteem*. Bonum.