Journal of Business and Economics, ISSN 2155-7950, USA
July 2021, Volume 12, No. 7, pp. 787-793
DOI: 10.15341/jbe(2155-7950)/07.12.2021/011

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Become a Neuro-educator: From the Fishbowl to the Sea

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Abstract: Our educational system requires change and to become more innovative. A better interpretation of the students' emotions is necessary to achieve real learning. Concurrent with the technological changes that we have to live, a new concept is emerging, but that will give a lot to talk about soon, it is neuroeducation. As we conceive it to date, education is coming to an end, and this is not just a saying because, behind that thought, there are prestigious scientists who support the idea that the change in education will come from the knowledge of the brain.

In this context, the "neuro-educator" appears, the future profession, gaining strength thinking mainly about preschool and primary school children who are the fundamental pillars of building a society's education and culture. The neuro-educator comes to be something like an ultimate guardian of good teaching. He or she is a university professional with good knowledge of the human brain, which will allow him or her to analyze and improve teaching programs because of his training in neuroscience.

From now on, we must consider neuro-educators and begin to take into account all those strategies. These are based on the brain's functioning that this experienced neuroscience teacher can give us to start placing the brain as the center of our learning and, from there, both students and teachers improve on a cognitive, emotional and even personal level.

Key words: neuroscience, neuroeducation, neuro-educator, gamification, emotions
JEL codes: I, I2, I21, I210

1. Introduction

Today, there are many people concerned with education and teaching methods. This concern is not only of parents and teachers, but it is a social feeling, a general perception that something in this area is not right. This scenario has led teachers of any level to be in constant alert, in continuous vigilance of the horizon, waiting for new ideas, technologies, or methods to improve teaching that requires changes. As a positive factor, teachers are hungry to know and apply new knowledge and rigorous, solidly established methods to improve, both in themselves to teach and in students to learn. In this sense, neuroeducation is emerging as the discipline called to fill those spaces; consequently, we have a new profession, the neuro-educator.

The neuro-educator becomes the teacher's future school profile and must know different fields such: human anatomy, basic neurobiology, psychology, neurology, and neuropsychology. He must have a basis in clinical neurophysiology to detect the symptoms of the primary diseases, syndromes, or brain injuries that affect children;

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knowledge of language structure, verbal communication, and the emotional components and learning about the development of normal and pathological personality. This knowledge facilitates the detection of psychological problems in conflicts that may arise in relationships with colleagues or teachers.

This essay is about neuro-educator emerging as a new profession in education and still harboring both concerns and hopes. This because the term “neuro” is still an expanding field that still has much to discover.

2. The Neuro-educator: The Profession of the Future

Today, advances in neuroscience allow us to analyze in greater detail the components of the brain and the aspects that affect education, such as emotion, curiosity, attention and cognition. Without a doubt, knowing these components will help us teach and learn better. However, especially among teachers, there is a feeling of very little progress has been made so that this can be applied and used to do things better in educational institutions. Indeed, must be recognized that there is a great gap between the knowledge provided by neuroscience and its application in the classroom. Some scientists consider that we are not yet in time to try to fill this stretch; for their part, others believe that precisely now is the best time to do so. In either case, what is evident is that there is a consensus that it is increasingly necessary to unite neuroscience and education. Currently, teachers face the challenge of finding new techniques and tools that can excite students, or at least allow them to teach the class in the necessary time that children of a certain age need to maintain attention.

Similarly, teachers are looking for ways to detect the various types of subtle disorders and symptoms that affect the normal process of education and learning. Today more than ever, teachers need to find a way to match all this with each child’s individuality, who by their very nature are always different from each other. So, this is where we close the circle, as this can be achieved thanks to a better knowledge of how the brain works, thanks to neuroscience’s contribution.

This brain research pretends improving learning in schools and universities in practice. Still, teachers’ responsibility is to show interest in neuroeducation, which is, as already stated, the union of neurosciences with education. This means that perhaps in the short or medium term, those educators who best capture and adapt to this trend will become neuro-educators. Consequently, this will become the profession of the future in education. Thus, the neuro-educator must understand that brain development and learning are firmly linked because the brain is the organ that makes learning possible through neuronal connectivity. Saavedra (2001) indicates that significant understanding leads to new connections to create synapses, enriching the largest number of neuronal interconnections or wiring in the brain. Thus, the neuro-educator’s role is to guide the student towards the new neuronal connections and the secretion of chemical components that make learning possible. Comprehension gives rise to deeper and more far-reaching understanding than content learning, which, when done by heart, is of shorter duration; this type of learning continues today in traditional education.

Consequently, the teacher must teach her subject by relating it to what the student brings to the learning situation. The student already comes to the classroom with a series of previous experiences from his family and environment. These allow the student to establish numerous connections in his brain. That is why, by taking this into account, the teacher will extraordinarily facilitate the student's learning (Saavedra, 2001).

Again, this tendency comes to break the traditional teacher's model, making him a neuro-educator, with all the connotations that this implies. New times call for new strategies, and recent discoveries have revealed that today's education requires restructuring. It does not fall behind in the face of the growing technological avalanche.

When applying neuroeducation strategies, it is estimated that teaching will be favored and can be obtained better results at the time of acquisition, retention, and learning application in the student. Considering that understanding how the brain works, the teachers will be better prepared to increase retention. This is the promise of neuroeducation, taking advantage of knowledge from the fields of neurology, psychology, and technology, among others. Using this information in the classroom can help teachers engage students, provide useful feedback that generates deeper understanding, and create an enriching learning environment that addresses students' social and emotional needs. According to Palomar (2017), today, there is various evidence of how a balanced and motivating learning environment provides children with better learning. That is why children learn "socially", actively building understanding and meanings through active and dynamic interaction with the physical, social, and emotional environment they encounter. Therefore, methodological strategies in the classroom based on neuroscience benefit students in the regular classroom and people with learning difficulties by praising and motivating students, awakening their interest in learning, improving their self-control, and their ability to learn. That is why it is necessary to have positive expectations about students' ability, which materializes in motivational aspects that do not allow them to fall into stress, restlessness, or early abandonment of studies.

3. Neuro-educator Skills

Fortunately, closing this gap between neuroscience and education is getting closer. However, for information to be transmitted correctly, teachers must transfer data between these two very disparate disciplines that use different languages. And this is where the neuro-educator figure arises, a person capable of teaching based on the real knowledge about our brain's functioning. The brain is very plastic and allows us to learn throughout life, which opens the doors to a fairer and more inclusive education.

Among neuroscience contributions that can help us improve classes, these five proposals by Francisco Mora (2013) are listed below:

- Start with something provocative. A phrase, an image or a reflection that will not leave you indifferent.
- Connect with the lives of your students. Present problems that affect them and do it in a way that they see interesting.
- Make them want to talk. Create a climate in which there is no fear of expressing themselves and leave room for the students to build their arguments.
- Introduce inconsistencies. The world is full of them. Use contradiction, novelty, surprise, bewilderment, or uncertainty.
- Avoid anxiety. Reduce the pressure and do not expose your students. Nobody learns like this.

The neuro-educator is a university professional with good knowledge of the human brain, which will allow him to analyze and criticize teaching programs that are apparently based on the rigor of neuroscience. Furthermore, the neuro-educator must detect problems in children and mediate their solution, psychological, medical, family or social. That is, this teacher, in addition to detecting failures in the children in class, would be the person in charge of working with them and then connecting with their families and also, if necessary, with the psychologists or medical specialists. This implies being aware of many processes, from the most subtle syndromes to the most open and obvious ones that include emotional blackout, depression, attention deficit, hyperactivity, autism, dyslexia or many other neurological syndromes that are not evident, but that interfere with the normal children's learning and memory.

The neuro-educator's fundamental role in schools is not only on advising teachers but also on helping the entire educational community face education from a more useful perspective, from the brain. He is the one who knows when the brain works best and how it works. He knows that we cannot always pay the same attention and that not all concepts are consolidated in the same way. In this way, education can be more personalized and reduce academic difficulties since the neuro-educator knows the importance of individuality and different learning.

The neuro-educator must support each teacher who is part of the educational community and the parents since he is the one who can develop the educational programs appropriate to the needs of each center and even each classroom. He is the one who should be giving the guidelines, such as:

- Must know how to work curiosity and prepare teachers to be capable of arousing their students' interest. A clear example would be the continuous questioning or linking of academic topics with real-life examples.
- Should be aware that there are different types of care and all of them are essential, so you should work in the classroom through dynamic activities.
- Must bear in mind that we can only maintain attention for fifteen minutes at a time, so we must work on it to increase that time and, above all, adapt our activities to that temporal pattern. For this, activities that require a high level of attention can be interspersed with other simpler ones. This will encourage students to capture the most significant amount of information.
- Must know how to create a positive emotional climate, work on emotions and self-control so that the learning process benefits from such work. Getting students to feel comfortable in the classroom is essential to work correctly, so the neuro-educator must give the necessary guidelines to teachers so that this climate prevails in educational centers.
- Must train teachers in new methodologies such as gamification.
- Must show that a single methodology is not enough to develop all the brains, but that the game is useful for all of them if you know how to work correctly.
- It should show that both art and physical activity play a more prominent role than it seems. That working with theater or music is possible in any subject; and that taking short breaks or exercising at the beginning of the day activates our brain and predisposes it to learn better.

The neuro-educator is a teacher who has to know these guidelines and teach them to the rest of the teachers. He must be a fundamental pillar in future schools. Thanks to his help, the students' academic performance will be increased since their cognitive abilities will finally be the center of education and will be developed to the maximum.

4. Jumping From the Fishbowl to the Sea

Therefore, we have to consider the concept and competencies that a neuro-educator must-have, and it is clear that the best option for teachers is to become neuro-educators. The reason is simple and, as already indicated, to detect possible disorders or difficulties that hinder learning. Above all, this work will help us improve educational quality, a task that has been repeatedly sought. Those of us who are now, as it is popularly said, "with our feet in the mud", we know that learning involves many aspects at the classroom level. Still, we never before have considered in depth that "learning something new means, in neurobiological terms, changing the brain" (Mora, 2013). We already knew that there are different teaching-learning models (behaviorist, constructivist, cognitive),

different learning types (repetitive, collaborative, visual, auditory, discovery, etc.). Even rote learning was abused as the most common route, accurate and useful for our students to achieve learning objectives. But neuroscience still made no foray into education. In all this, we teachers are a strategic piece to be able to put together this puzzle. Today it is already certain that both initial teacher training and ongoing training are essential to face the new challenges of education. For example, UNESCO is betting on quality educators, improvements in curricular proposals, pedagogical practices, and above all, fostering an environment where emotional education prevails.

Precisely, neuroeducation also prioritizes educating the emotions, since the emotion-cognition (mental process) binomial is indissoluble. But not only children must learn to know their emotions, manage them, develop social skills, but it is the teacher himself who must also work with his emotional aspects. There will undoubtedly be great synaptic connections in a classroom with a good teacher-student and teacher-group emotional connection. It has long been known that synaptic connections between neurons are not static but undergo brain activity changes. This process of synaptic plasticity is essential for learning and memory.

5. Conclusions

Learning means changing the brain. Each new knowledge that our mind memorizes creates and reinforces various neural connections. That is why neuroeducation can bring so many benefits to teaching. We have seen here different ways of bringing neuroscience closer to our current education. Little by little, we base the entire educational system on the various strategies based on the brain's functioning to adapt each learning to each of our students. New teaching methods have been proposed here, mainly focused on adapting learning to each student, to each way of learning, to each brain. It is undoubtedly a difficult task, but it is also true that with will and practice, we can change the schools of today.

We have discovered that our educational system makes little adults. We fill our mouths saying which things are childish and which are not, but we are creating people without self-esteem and many doubts in reality.

There are still teachers who do not know how to work in a team; however, it is from them that we ask for security, initiative, creativity and more skills, because our educational system has been taking them away. Neuroeducation can help us avoid all of this. A neuro-educator in the future will help every teacher to know how to adapt the tasks they carry out in the classroom so that each of their students knows what they are worth, so that each student knows that they have a lot to give to others throughout their lives.

Deepening in this new field of research has shown an innovative vision of the entire educational system. Still, it has also shown that variety is the best, that music can be a great ally when it comes to carrying out a boring task, which a through play we can teach our students great knowledge, that thanks to theater we can get students to improve both emotionally and curricularly, or even that thanks to breaks or a little prior exercise our explanations will be better understood.

Perhaps all these changes generate fear or anxiety because they force us to leave our comfort zone. Still, changes in innovative methodologies can lead us to a new educational world. The neuro-educator in the future, due to its social repercussion and particularly in schools, could well be a highly recognized profession. A profession that will require constant and updated training in the knowledge acquired in the neurosciences that will be projected in education.

It is a specialized knowledge that now appears rapidly in modern societies. Right now a convergence of discoveries in psychology, neuroscience and robotics (robots with the capacity to learn) is already in sight, which

leads us to the idea that profound changes will soon occur in educational theories that will lead us to new designs applicable to the environment in that the children learn.

If, when teaching and training children, the intellectual stimuli that the brain needs are offered, cognitive abilities can be developed and, in this case, it is also easy to learn. But when teachers convey the subject, in the same way, students often know the content by heart, without understanding it. From this neurobiological point of view, says Béjar (2014), it is meaningless. If the student has misunderstood something, memorization precisely reinforces the faulty connections by activating it again. In this way, the mental error is compounded deeper in the brain. Faced with this situation, he recommends completely changing the method of explaining because learning something new costs much less than forcing or forcing to reorient a neural network that has already been consolidated.

We are on the verge of conceiving a new world, a new way of understanding our culture. We are getting closer and closer to program our education actions from the most accurate starting point that exists, the brain, far from ideologies and beliefs, far from hypotheses or from justifying our efforts by the simple fact that we learned it that way. The brain will be in charge of showing us the guidelines to follow, the steps to take, because with it as a guide, we go to the right thing, to what unites us as human beings. Time is going to take charge of introducing the word neuroeducation in all places where education is mentioned. It will also ensure that university education careers become disciplines where neuro-educators are trained, people capable of educating through knowledge of the brain. Times of hope are coming because understanding the brain will be much easier for everyone to program activities to awaken emotion among our students. Without emotion, there is no learning. Because if we manage to awaken emotion, attention will immediately follow, then concentration as a consequence of that process learning will occur.

The learning obtained through emotion is one that lasts over time as an apprenticeship that at a particular moment has marked the person and has helped them to continue learning, always following the guidelines set by their inner teacher. Times are exciting; it is the new educational culture, the unique panorama in education is already beginning to be written and it has the brain as its starting point. A starting point that will unite us more as human beings, that will make us better understand that, regardless of where we were born and where we are on this planet, we share as human beings, elements that are common to all and which we must take into consideration to continue progressing as a species.

We are left with the responsibility that each of us has to surround ourselves with right information and direct our actions as educators to use better the time we spend daily with children in those stages that are the most important of their lives. So this new field can greatly benefit us and help us break away from rigid and embedded traditional methodologies. We are betting on this educational change through innovative proposals and ensuring that emotion and cognition are not opposed. Perhaps then, in a few years, in class we may be talking about our brain, how it works and how we learn.

In short, we must consider this future professional's role, the neuro-educator, as essential when developing our programming as teachers. We must begin to take into account all those strategies based on the functioning of the brain that this experienced teacher can give us to begin to place the brain as the center of our learning and, from there, improve the performance of students and teachers, both at the cognitive as well as emotional level.

> "It is as if nature has preserved each child from the influence of human intelligence to give preference to the inner teacher who inspires him; the possibility of carrying out a complete psychic construction before human intelligence can make contact with the spirit and influence it". Maria Montessori

References

Béjar M. (2014). *Una mirada sobre la Educación, Neuroeducación*, Padres y Maestros.

Campos A. L. (2010). "Uniendo las Neurociencias y la Educación en la Búsqueda del Desarrollo Humano", available online at: http://www.educoea.org/portal/La_Educacion_Digital/laeducacion_143/articles/neuroeducacion.pdf.

Eusebio C., Cobián M. and Cazón M. R. (2008). *International Congress of Psychopedagogy*, available online at: http://www.uca.edu.ar/uca/common/grupo18/files/Neuroeducacion_en_el aula-.pdf.

Franco S. J. (2013). "Educación basada en el cerebro", *Med UNAB*, Vol. 16, No. 1.

Gil R. L. (2015). Neuroeducación, un nuevo paradigma educativo. El nuevo diario, available online at: https://www.elnuevodiario.com.ni/opinion/362850-neuroeducacion-nuevo-paradigma-educativo/.

Kandel E. and Jessel T. (2012). *Principles of Neuronal Science*, United States: Mc Graw Hill.

Loja M. (2015). *Neuroaprendizaje en el Aula*, Ecuador: ERIM.

Mora F. (2011). "Educar con Cerebro", available online at: http://www.ub.edu/geneticaclasses/davidbueno/Articles_de_divulgacio_i_opinio/Altres/Neuroeducacion-QUO.pdf.

Mora F. (2013). *Neuroeducation*, United States: Casa del Libro.

Palomar M. (2017). *Qué Aporta las Neurociencias al Mundo del Aprendizaje?* España: ISEP.

Saavedra M. D. (2001). "Aprendizaje basado en el cerebro", *Revista de Psicología de la Universidad de Chile*, Vol. 10, No. 1, pp. 140-150.

Vargas A. Y. (2015). Neuroeducación en la formación docente. Fortaleciendo la dimensión personal del educador hacia el desarrollo integral del educando, available online at: https://ux.edu.mx/wp-content/uploads/8-NEUROEDUCACION-EN-LA-FORMACION-DOCENTE.-FORTALECIENDO-LA-DIMENSION-PERSONAL-DEL-EDUCADOR-HACIA-EL-DESARROLLO-INTEGRAL-DEL-EDUCANDO.pdf.