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RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

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Module 10: THESIS.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

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SUMMARY:

Current advances in research on the human brain have shown resulting in a new educational vision of integration with neuroscience: ***The Neuroeducation,*** also called ***Neuropedagogy,*** uses methodologies that They help to increase and optimize motivation, attention, and learning.

Thus, the aim is to evaluate ***the influence of Neuroscience on the current education*** **and** ***in the personal and academic development of university tutors Madrid Graduate and Business School. Spain.***

The aim is to achieve the analysis and relationship objectives proposed in the study. relevant, according to the ***level of investigation*** proposed.

The research is conducted using the ***Level*** of ***Research Design Non-experimental study,*** with ***a qualitative approach*** and ***a descriptive level of research. Relational. The*** study population consists of **40 professionals,** tutors university students and distributed in a single population.

The data provided were processed using the **SPSS® program** and **a survey** was conducted using **Google Forms.** The results obtained show that if they were included in the Academic updating programs in Neuroscience knowledge would contribute a increased improvement in academic performance, demonstrating benefits to to implement a new ***educational approach to Neuroscience.***

Therefore, this study proposes teaching strategies based on ***NeuroEducation,*** as a **possible alternative to achieve educational updating.**

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Keywords:

Neuroscience, neuroeducation, teacher training, continuing professional development

Teacher, outdated education, academic performance. University. Tutors. Professors.

"An investigation can be defined as an effort undertaken to solve a problem, of course, a problem of knowledge." **(Sabino,** 1992, p.45).

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INTRODUCTION.

I currently work as *a Professor/ Tutor in several Master's and MBA programs in the Human Resources and Neuropsychology modules for different universities Spain at the Madrid Graduate and Business School,* and I have observed that there is a certain lack of knowledge about ***Neuroscience*** on the part of the teaching staff, due to the Most of them specialize in Literature, and their contribution to their students is significant. It is limited to its specific topic in particular.

Personally and professionally, I have long contributed to the FORUM of discussion of the Human Resources area, of said Graduate and Business School, several topics related to ***Neuroscience*** applied to work and personal life, and has had It has been very well received by the students, since ***Emotional Intelligence*** is closely connected and related to the business field.

Therefore, the ***research THESIS*** will be developed by relating ***the influence that Neuroscience can exert on current academic training*** and with This will allow us to observe the benefits it will bring to both teachers and students of the Madrid Graduate School of Business, providing suggestions without modifying the study.

To do this, we will begin with the preliminary research project, which includes relevant information about the first steps that are framed in relation to the *process aimed at solving the identified problem,* through the following stages:

Planning, Data Collection, Implementation and Dissemination.

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PLANNING STAGE.

This stage will involve **3 steps.**

ÿ ***The first step*** is ***to select the research topic.***

The proposed research ***topic*** is *to relate* ***Neuroscience and the performance of university tutors/ professors in the Graduate School and Business in Madrid.***

ÿ ***The second step*** will allow us to identify ***the variables*** that will be involved in the research study.

IMAGE 1. Variables



Source and Design: own work.

First Main Variable of study:

The **main PROBLEM that needs to be solved or investigated** is identified .

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Based on what has been observed, there are many problems related to this issue. However, it was decided to work with the following problem, identified as first main variable.

"Academic obsolescence in Neuroscience among Tutors at the School of Postgraduate and Business Studies in Madrid."

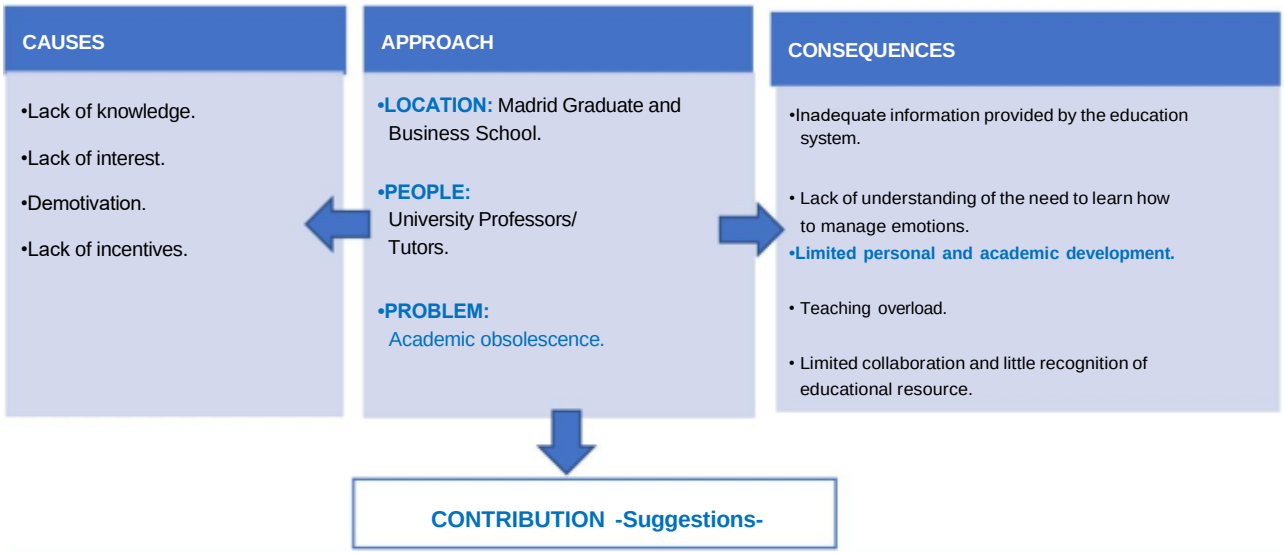
Having identified **the first main variable, which is the "PROBLEM" ,** and The one that will be worked on first to begin developing the title, ***the second one*** will be sought ***and third, variables dependent on the main variable,*** in order to develop and complete the title of the research study.

The second and third variables will be found by identifying either ***the Cause*** that originates the Problem, ***the Consequence/ Effect*** produced if the Problem is not solved, or ***The contribution*** that can be made to improve the detected situation is good .

In this study, we will work with ***the Consequence,*** since **the Level of Study** is It will be identified in a ***non-experimental,*** qualitative way , since it will not be exercised manipulation of the independent variables, observing the phenomenon as it occurs in its natural context. Therefore, ***the non-experimental design will be cross-sectional,*** since it The data will be collected at a single point in time. Likewise, its level will be ***descriptive*** (it will be will indicate characteristics of the study population) and **Correlational-Causal** (will be sought the relationships between the identified variables).

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IMAGE 2. Causes. Approach. Consequences and Contributions.



ÿ **To foster,** promote, and encourage the importance of Neuroscience as knowledge in learning and motivation in teachers.
ÿ **To provide** teachers/tutors with programs on Neuroscience in order to acquire knowledge that facilitates empathetic communication skills and motivation.
ÿ **Train** teachers/tutors to include conflict resolution techniques and psychological training.

Source and Design: own work.

IMAGE 3. Main Variable and Independent Variables.

MAIN VARIABLE:

"Academic obsolescence in Neuroscience among tutors at the Madrid Graduate and Business School."

INDEPENDENT VARIABLES:

"Limited personal and academic development of the tutors at the Madrid Graduate and Business School."

Source and Design: own work.

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The third step involves **combining the variables using a connector,** which in This study will ***examine the influence of Neuroscience on personal development and academic of the tutors.***

IMAGE 4. Initial title.

INITIAL TITLE

"Outdated neuroscience influences personal development and academic in the Tutors of the Graduate and Business School of Madrid."

Source and Design: own work.

IMAGE 5. Proposed Title.

PROPOSED TITLE

"OUTDATED TRAINING AND PERSONAL DEVELOPMENT AND ACADEMIC, IN GRADUATE AND BUSINESS SCHOOL TUTORS FROM MADRID."

Source and Design: Own work

Once **the title of the Research Study has been identified,** it will be possible to begin to draft the relevant content that contributes to the analysis of the proposed topic.

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CHAPTER 1. LINE OF RESEARCH.

"We are not students of a specific subject, but students of problems. And the

"Problems can transcend the boundaries of any subject or discipline."

(Popper, 1963, p. 88)

1.1. Epistemology.

Epistemology **analyzes** the knowledge given to humanity .

Epistemology is the branch of philosophy that studies the definition of knowledge and its production of knowledge" **Castañeda, 2008, p. 36.**

The word Epistemology is composed of:

"Episteme" refers to knowledge or science. **"Logos"** refers to

to the study or treatise of a subject-.

The term comes from the Greek word **"ÿÿÿÿÿÿÿÿ",** meaning knowledge. It deals with the theory of knowledge and has a close relationship with the social sciences and philosophy.

Epistemology differs from *methodology, the philosophy of science ,* and *Epistemology.* It is an essential tool for the analysis of science and its forms in the general development.

The main function is to clarify the circumstances and their limits. determining the scope and validity of knowledge.

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According to **Mario Bunge** (1980) *"Epistemology is the branch of philosophy that "It studies scientific research and its product, scientific knowledge."* It is important

It should be noted that this concept is only about a century old.

Its concept is based on the philosophical branch, a discipline that studies the human knowledge and the way in which the individual acts to develop their thought structures.

It is based on the Method (where you want to go), whose *methodology* seeks achieving certain research objectives and its *paradigm* refers to something which is taken as a prototype or example.

From the last decades of the ***20th century*** onwards , the hegemonic legacy was questioned of positivist science in the ***18th and 20th centuries.***

This dialogue emphasizes the need to create, disseminate, and manage knowledge through a new epistemology and more systematic methodological methods.

Bolaños (2015) highlights *"the validity and permanence of the opposition epistemological and methodological among those fields of knowledge dedicated to study of physical phenomena and those oriented towards more abstract aspects of reality."*

Similarly **Palgath, Horvarth and Lodge** (2017) *"They argue that when We consider issues that affect humanity, such as those concerning the Education, the complex and systemic nature of these issues requires integration*

from ideas and methods from different disciplines, for the development of comprehensive solutions."

According to **De Corte** (2018) *"the great complexity that underlies the systems educational and in pedagogical practice, it outlines education as a crossroads where Both dialogue and conflict can arise between a wide variety of disciplines.*

*Historically, **the dialogue of educational science or pedagogy** with other sciences, This gave rise to the multidisciplinary product known as **educational sciences.***

*This is how subdisciplines such as educational philosophy emerged, sociology of education, anthropology of education, or **educational psychology,** all of them framed within the constructs of the social sciences or humanities."*

From **Collado** 's point of view (2016), *"cooperation between disciplines manifests itself as a new frontier of thought necessary to reform the problems arising from the reduction and fragmentation to which science was subjected, human reality and the ontological structure of nature.*

These disciplinary interrelationships constitute an epistemological dialogue and important methodological approach to establishing communication channels, in order to define an epistemic framework that underpins the consilience between different fields of knowledge".

As a reflection, the objective will be ***to evaluate the nature of Neuroscience*** for to demonstrate that its philosophical and scientific evolution takes place through the dependence and epistemological continuity.

If these parameters are met, neuroscience will gradually realize

Its epistemological autonomy will emerge, and a new discipline of neuroscience will arise.

If their independence is not achieved, epistemological problems will arise.

which may lead to false explanations, which may lead to the birth and

proliferation of what is known as ***"Neuro".*** Therefore, it will be possible to question the

alleged epistemological legitimacy and explanatory validity of ***Neuroeducation.***

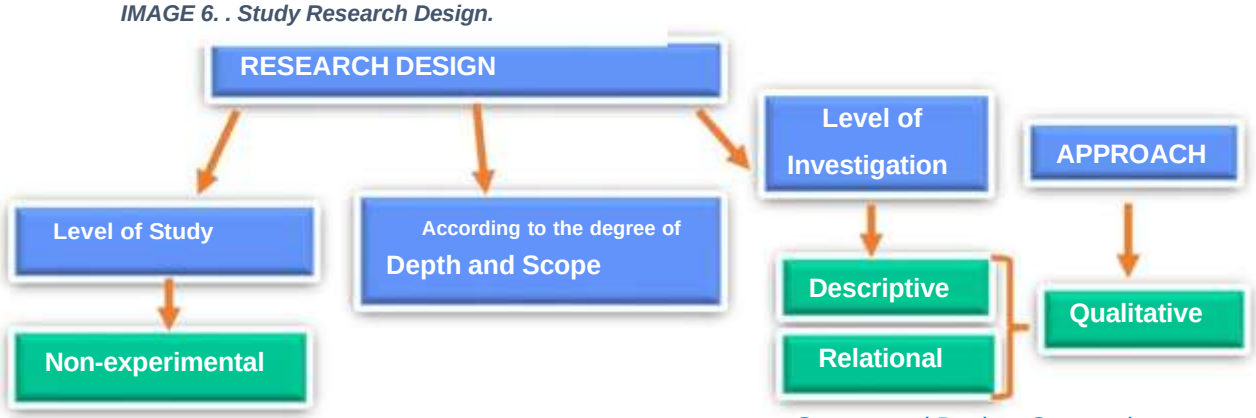
1.2. Approach.

The research approach is qualitative, since data will be analyzed.

which will be observed in the questionnaire that is inserted in ***Chapter 5 Framework Methodological, Section 5.1.*** In the ***qualitative method,*** it is recommended to analyze the language content, such as selective coding analysis, which proposes the relationship between the categories that appear in the participant's discourse.

The illustration of the Research Design is inserted.

IMAGE 6. . Study Research Design.



Source and Design: Own work.

1.4. Descriptive research.

It is based on the description of a fact or phenomenon. Prior knowledge exists.

of the topic to be studied, leading to more precise questions focused on the relationship between variables.

The research study will interpret ***what Neuroscience is,*** establishing the

bases for the research study, in the case of a ***non-experimental study,***

Cross-sectional and descriptive.

In ***Chapter 4 Theoretical Framework, subsection 4.2. Theoretical Bases. History and Evolution of Neuroscience,*** provides and supports ***Descriptive research.***

1.5. Correlational research.

This is a ***non-experimental investigation*** because it relates two or more variables

The aim is to discover how one variable changes as the other changes. This type of

The research is based on the scientific method, its main characteristic being that it

It is based on *descriptive analysis,* prior to training.

According to this research, the characteristics of the variables will be known,

and it is about explaining its impact on a specific human group, such as the

Professors/ Tutors of the Madrid Graduate and Business School.

Within the scope of this study of relationships, it is necessary to propose a hypothesis

that proposes the relationship between the three (3) proposed variables that affect the

The problem with the title ***(The obsolescence in Neuroscience)*** and the consequences ***(the***

low personal and academic development in university tutors), being concomitant with each other.

Every ***line of research*** must start from the nature of the exploration and move on through different areas of research until reaching its interpretation, therefore it is

It is important to consider that the necessary investigations can be carried out until we reach at that level.

Research does not arise spontaneously, but rather after a search.

to find possible alternatives to the solution studied.

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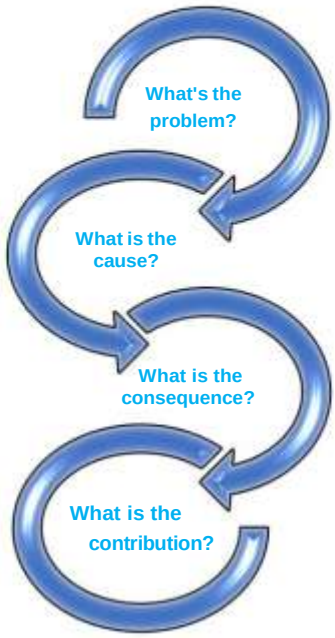
CHAPTER 2. PROBLEM STATEMENT.

2.1 Description and formulation of the problem.

Problematic reality:

The current problems faced by teachers, professors, and university tutors when they want to To contribute learning, their lack of knowledge of brain functions is added to this the various contexts in which students operate, such as the economic aspect, greeting, family and/or cultural, hindering their performance due to lack of updating academic.

IMAGE 7. Current problems as a question.



Source and Design: Own work.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

What is the reality of the problem?

The problem I've identified is that we're facing a
Outdated knowledge in Neuroscience, which influences personal and academic development in the tutors of the Madrid Graduate and Business School."

Therefore, the problem can be formulated in two ways:

ÿ *Interrogative:*

What are the factors that influence the personal and academic development of university tutors at the Madrid Graduate School of Business during 2021?

ÿ *Declarative.*

Determination of the factors that influence the personal and academic development of university tutors at the Madrid Graduate School of Business during 2021.

What is the cause of the problem?

The causes of this problem are multiple for this study, therefore I choose the

The next cause is ***the lack of updated pedagogical training on Neuroscience.***

the teachers/ tutors, resulting in ***deficient personal development and***

academic.

Pedagogical updating is fundamental for the transformation of society

which values human development, in a constant search for Being, Doing and Having.

To that end, several ***consequences*** are identified that considerably affect the

Pedagogical obsolescence of the teacher, professor, university tutor.

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What could be the consequences or effects of the problem?

a. *Academic demotivation.*

One of the consequences detected (through indirect observation) is that if

Academic programs are not being updated to include ***Neuroscience,*** for

to understand the functionality of the adolescent and adult brain, that is, the student's brain, and

This ***will*** help ***the tutor/ teacher learn to manage their own emotions.***

They will experience low personal and academic development, impacting their personal lives and

professional. The demotivating factor prevails in some teachers due to their choice

a vocation that does not satisfy him

b. *Lack of interest in curriculum improvement.*

Teachers' attitudes towards pedagogical innovation are sometimes reluctant to embrace it.

in new pedagogical models, where their motto seems to be: *"Better bad and*

"Known is good to know"

Other contributing factors include long working hours, the number of students to tutor,

Low wages and a multitude of external and internal factors that don't help

to strengthen interest in curricular work.

c. *Inadequate information from the education system.*

Teachers face difficulties in their working relationship when trying to build

experiential learning, due to not having the correct information provided by the

current education system.

d. *Lack of understanding of the need to learn to manage emotions.*

The ability to recognize, understand, and regulate emotions is paramount

This is important for teachers, because if they don't reinforce these skills, it will affect the learning process.

of learning, the physical, mental and emotional health of students, being

crucial for establishing positive interpersonal relationships.

e. *Limited personal and academic development.*

Learning is not just about disseminating academic knowledge, but about

Self-knowledge to achieve good personal development.

f. *Limited collaboration and little recognition of the educational resource.*

One of the many problems that teachers must face is the discomfort caused by the

occupational stress due to working conditions and resource deterioration

educational.

What contribution will be made to the problem?

Since **the proposed design is non-experimental,** the **variable** is included.

Independent Contribution along with the **dependent variable Problem,** based on a

My suggestion as a Personal Development professional is ***to propose from the***

Neuroscience: A New Learning Model.

To achieve this, the plan is *to upload videos to a YouTube channel* on related topics .

With *Experiential and Emotional Learning,* give talks and lectures for tutors.

university students, teachers, educators, psychologists, etc., to raise awareness that we are in

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an *"Era of Change",* not a *change of era* and updating the Educational Model that is

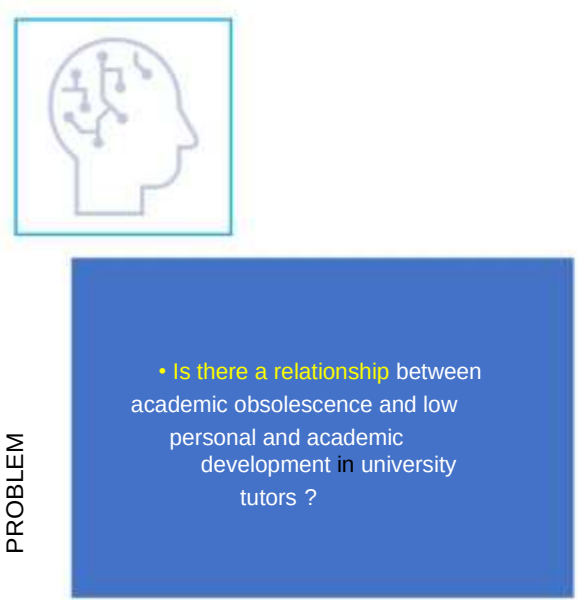
obsolete for the current times of the *21st century.*

Based on the above, the three will be addressed in the Theoretical Framework

Variables identified regarding the Problem and Consequences:

"Outdated knowledge of Neuroscience and low personal and academic development in Tutors university students"

IMAGE 8. Detecting the Problem.



Source and Design: Own work.

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Specifically, one can relate ***the effect or impact that Neuroscience has in the training programs and the personal and academic development of the tutors university students.***

2.2. Justification of the Research.

The research study is being conducted **because** the existing relationship has been detected. between the lack of information regarding Neuroscience and the level of interest in to update knowledge in personal and academic development, **so that** the causes The detected issues will not affect their daily work. The main **contribution** will be to encourage and motivate **the University professors/tutors** improving their ***Emotional Intelligence.***

The current problem in ***Spain*** in the ***21st century*** is that the ***educational model*** It continues with the same formula from many decades ago, and it does not incentivize student/pupil to become involved in the study plan that allows them to research and delve deeper in knowledge, because a final schedule must be met, with assessments that are They are closer to intelligence quotient than to *emotional intelligence.*

There is no approach from the teacher to the student, to get to know him, guide him and to help him reflect on his purpose in life, both personally and professionally professional.

Based on the above, questions arise that need to be answered,

- ÿ What are the current problems facing students and teachers?
- ÿ Why does the current educational model produce adverse effects on students?

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ÿ What are the factors that have led to the current educational model not

Will it work?

ÿ What is the relationship between Neuroscience and Experiential Learning?

ÿ What should the teacher do to get to know their students and get them involved in their learning?

studies?

The answers will be available when it begins to be included in the *curriculum.*

part of the Government and the Ministry of Education and Culture1 , topics that involve the knowledge of the person as such, their physical, emotional, and social health.

In recent years, the education system has undergone enormous changes in Curriculum definitions and teaching methods, reflecting the need for profound changes in the education system. Clearly, this revolves around the Introduction of the concept of competence as the axis of curricular definition, which changes completely the paradigm of academic organizations.

Furthermore, it must combine significant professional quality, be prepared in the knowledge of their discipline, in the knowledge of the curriculum, methodologies and Assessment. You must work on your skills related to ***emotional management*** that will help you It allows us to face current challenges, and at the same time, it must have a human quality exceptional.

[1] **The Bologna Process,** now 20 years old in Spanish universities, is a new system implemented to regulate student access to universities. In Spain, this system for undergraduate studies...
It was implemented in a fairly rapid process.

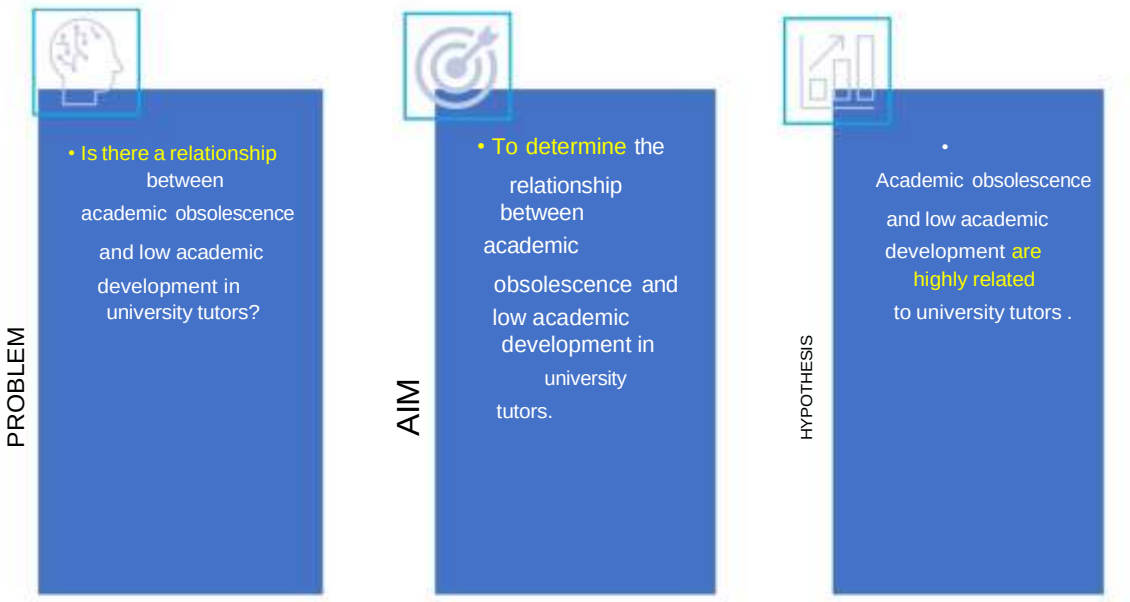
CHAPTER 3. RESEARCH OBJECTIVES.

3.1. Consistency Matrix.

It is time to link the title, objectives, and hypothesis using the

Consistency Matrix2 .

IMAGE 9. Consistency Matrix: Problem. Objective. Hypothesis.



Source and Design: Own work.

Specifically, one can relate ***the effect or impact that Neuroscience has in the training programs and academic development of university tutors.***

[2] **MC,** *"is a methodological instrument that allows evaluating the degree of coherence and logical connection between the title, the problem, the objectives, the hypotheses, the variables, the type, method, research design, the population and sample of the study"* (Marroquín, 2012)

3.2. General Objective.

Determine the socio-educational characteristics to understand the level of interest in Neuroscience in University Tutors at the Graduate and Business School

Madrid, during the 2021 academic year.

3.3. Specific Objectives.

ÿ **Analyze** the educational level to understand the tutors' interest in the Neuroscience.

ÿ **Identify** the level of interest of the Tutors in expanding their knowledge about Neuroscience for your personal and academic development.

ÿ **Compare** the socio-educational impact with the degree of interest in updating their academic level to optimize your EI level

ÿ **Describe** the relationship between the academic level achieved and its personal development.

ÿ **Inquire** about the knowledge and beliefs of the teachers/tutors,

They have information about the process of pedagogical innovation.

ÿ **To know** the level of appreciation that teachers/tutors have in relation to development and willingness to change that every innovation process entails academic.

3.4. Hypothesis.

- ÿ Academic obsolescence and low academic development have a high degree of relationship with university tutors.
- ÿ Academic obsolescence affects personal and educational development in university tutors.

It is important to understand the minimal process that will need to be carried out in relation to To raise awareness about pedagogical innovation among teachers/tutors at the School of Postgraduate and Business Studies in Madrid, therefore the research study about the Attitudes regarding change can provide a new perspective and explain the phenomenon. why certain resistances, situations of bewilderment, and scenarios are revealed heterogeneous.

The university professor/tutor must ***be an agent of change*** as ***a mediator of learning*** and ***their own personal and academic development.***

According to **(Tejada,** 1995, p.21), *"the process of change is not something static, nor replicable, but rather an articulated set of events, varied activities and complex strategies in which there are dynamic and transformative relationships, which in turn "It is not possible to develop it linearly because it depends on the idiosyncratic context."*

CHAPTER 4. THEORETICAL FRAMEWORK

4.1. Background of the Investigation.

According to **EH, Jiménez** (2019), *he emphasizes the application of transdisciplinarity between* ***Neuroscience and education*** *and advocates for the approval of disciplines such as* ***Neuroeducation, Neurodidactics*** *and* ***Neuropedagogy*** *in teacher training for Concretization of results. However, in a diagnostic study conducted on teachers of The University of Cienfuegos in Cuba found that it is still insufficient. knowledge they have, with respect to the contents of Neuroscience applicable to the education.*

Furthermore, ***deficiencies in the treatment of said content were noted in the Current Study Plans and Discipline Programs,*** *hence it is identified as* ***scientific problem,*** *the need to* ***include neuroscience treatment in the content of initial teacher training.***

Among the main findings, the ***lack of preparation received by the students*** *stands out.* ***teachers in training regarding neuroscience knowledge,*** *as well as the insufficient treatment of the topic in the disciplines and subjects that contribute to its professional training to face the pedagogical activity.*

According to the author **Calzadilla Pérez, Oscar Ovidio et al** (2017), *the The research work carried out* ***reveals the treatment of the deficiencies regarding the integration of scientific knowledge from Neuroscience and Pedagogy*** *in the*

curriculum of university degrees for the initial training of teachers, insofar as its

This fragmented vision becomes a current epistemological problem.

The persistence of such insufficiency is a cause of pedagogical misunderstanding, of the brain changes that occur during learning, *which implies modifiability and*

Diversification of teaching strategies. Consequently, the socialization of

experience of the case in Cuba, regarding the integration of Neuroscience in design

curriculum of university degrees for teachers of Early Childhood Education, its

reality and perspective in the ongoing construction of Neuropedagogy as a discipline

emerging scientific character.

The criteria presented are the result of research by the development group.

of Neuropedagogy in the reference careers of the University of Holguín, and are

subject to continuous validation.

Canosa Fuentes, Adela and Collado Ruano, Javier (2018) contribute to *Fundamentals transdisciplinary epistemological approaches to education and neuroscience,* ***"The process of emergence of the new area of knowledge,*** *a product of the convergence between the*

The fields of neuroscience and education ***are still in their consolidation stage.***

At this point in disciplinary evolution, it is essential to define a framework

multidimensional for the construction of knowledge, in order to substantiate the

consilience between the academic fields involved. This work carries out a

critical review of the literature associated with the underlying epistemological issues

in the attempt at communication between disciplines, providing a theoretical framework that

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It starts with basic epistemic questions, ultimately culminating in a set of foundations that establish the synergy between educational sciences and brain sciences.

In the reviewed literature, the state of terminological indefinition of the area referred to as educational neuroscience, Neuroeducation, or mind, brain, and education. This lack of clarity in the terminology This finds its correlate in the epistemological ambiguity of the different proposals, thus such as the need to overcome one-way communication models.

***In conclusion,** this type of relational model, situated within an interdisciplinary framework, **It might be demanding an evolution towards a transdisciplinary approach:** with the establishment of an effective two-way communication that incorporates professionals and educational researchers as active agents in the processes of building knowledge of this new field."*

Polo Sánchez, MT, Fernández Cabezas, M., & Fernández Jiménez, C. (2021), According to the work presented on the topic *"Factors to enhance the development of University communities: Ideas, beliefs and attitudes of university faculty"*

They indicate that, *"The success of inclusion processes depends on several factors, including of the level of empowerment of the educational community in the process.*

*In this sense, **the teacher's role is a key element,** since their attitude and expectations shown towards students with educational needs special circumstances will positively or negatively influence their self-esteem, motivation, and learning. This article explores the ideas, beliefs, and attitudes towards students with*

special educational needs, teachers, and the influence of the variables is analyzed

gender, age, years of teaching experience, contact information, and information about disability

They have about these attitudes. In general, it could be observed that ***the attitudes that***

The feedback from the teachers was quite positive; however, they showed a great deal of

lack of awareness of the inclusion experiences of students with disabilities

that are carried out at their university, demanding more training and information.

The results are discussed, the limitations of the study are presented, and future directions are offered.

lines of research."

Dueñas Yarlaqué, Carlos David. (2019), in his study on the *"Relationship between the*

"Update of the University Teacher and Academic Motivation" contributes the following,

"This research determines and explains the relationship between the ***Update of***

University Professor; its dimensions: Scientific Research, Publications

Scientific, Vocational Training and Professional Performance with Motivation

Academic. *Our variables consider two closely linked aspects in the field*

Pedagogical : ***the professional development of university faculty and academic motivation.***

The hypothesis formulated is expressed as follows: The Level of Update of the

University Professors are significantly related to Academic Motivation in

Teaching at the Higher Education Level of the Faculty of Education, Lima Campus of the University

National University of San Marcos.

The results are established through the statistical correlation test. Pearson's bivariate correlation coefficient of +0.532, which, according to the criterion specified, the variables ***"Teacher Training Level"*** *and* ***"Motivation Academic"*** *have a statistically moderate directly proportional relationship significant, with a margin of error less than 0.05%, thus* ***approving the hypothesis of the investigation.***

4.2. Theoretical bases.

The object of study of ***Neuroscience*** as a neuroscientific explanation starts from to understand its terminology and where its concept originates.

Neuroscience, as a field of work and study, encompasses multiple disciplines. interrelated with each other, since it is necessary that the sciences among themselves complement and cooperate with each other, beyond the sphere of experimental disciplines And for this they will have common factors in terms of structure, function, histology (cellular morphology and levels), biochemistry (cellular metabolism), physiology (states normal states of the nervous system) and pathology (altered states of the nervous system), giving giving rise to the biological bases of human behavior.

Neuroscience research focuses on the development of the nervous system, its structure and functions.

Although the study of the brain is as old as science itself, it has progressed faster and significantly, since the **20th century.**

Therefore, *neuroscientists* have now narrowed down the complexity of the problem in small parts, defining them as ***levels of analysis,*** which will allow to conduct systematic experimental analyses, which will help to understand how it works the brain, when identifying the object of study based on the characteristics from the molecular, cellular, systemic, behavioral and cognitive, thus differentiating their different applications.

The first thing is to know ***the etymology*** of the word ***Neuroscience,*** and then to understand its scope as a discipline and also to be able to delve into its history, its authors and evolution to the present day.

Neuroscience comes from the **Greek word neuroske: *"nerve, neuron or neurosis"*** and the **Latin scientia: *"knowledge".***

According to **Muzur** and **Rincic** (2013), they justify and provide their reason for being in terms of that,… *"The Greek prefix "neuro" (ÿÿÿÿÿ) etymologically means nerve."*

"It is the science dedicated to the study, observation and analysis of the nervous system, both humans and animals."

That is why the first discipline to coin a name with this prefix It was precisely ***neurology*** in 1681, related to the study of the structure and function of the nerves.

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The study of this field starts with nerve impulses, given that neurons are in continuous communication -synapses- with each other.

According to **Salas Silva Raúl** (2003) , ***neuroscience*** defines it as:

*"It should not be considered as a discipline, but rather as the set of sciences whose The subject of research is the nervous system, with particular interest in how activity of the brain, it is related to behavior and **learning."***

Neuroscience refers to each of the sciences that, from different points of view, From a visual perspective, they study the ***CENTRAL NERVOUS SYSTEM*** and ***the NERVOUS SYSTEM PERIPHERAL*** aspect of the human being, that is, its cellular, functional, evolutionary and molecular, from physiology and pathology (sometimes of animals).

It allows us to understand how ***the brain*** matures at different stages of age. And given the complexity of the brain, it is considered a very broad scientific field. classifying into sub-sciences according to their functions.

The study of the ***nervous system*** did not begin at the end of the **17th century,** but has This has been the beginning of the origin of the term ***"neurology".***

According to **Katona** (2002), *"The different studies on the brain and with Special interest in mental activity began in Egypt and Greece in the centuries prior to the Christian era."*

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The empirical research of **Galen of Pergamon** (129 AD-201/216) on the cranial nerves and spinal cord, based on animal anatomy, has dominated the academic world for over a thousand years, laying foundations as precursors of **Andreas Vesalius** (1514-1564), **René Descartes** (1596-1650), **Jan Swammerdan** (1637-1680), **Thomas Willis** (1621-1675), and other prominent neuroscientists.

According to **López-Muñoz, Boya and Álamo.** (2006). *"The neuronal theory Developed at the end of the **19th century** by* **Santiago Ramón y Cajal,** *it established the unity of analysis in neuroscience studies"*

Therefore, a new concept is debated and begins to be developed based on:

If the neuron is the structural and functional unit of the nervous system, then it is almost illogical. develop two analytical streams: the downstream stream, interested in identifying, describe and explain the physical, chemical, and biological mechanisms that govern the neuronal activity; and upstream, its motivation is to understand how the neuronal activity is organized into neuronal systems and how these systems cause the mental activity (cognition, emotion and behavior).

During the last century, and especially during the last decade, Neuroscience has ***evolved*** rapidly, arguing its great necessity by resorting to interdisciplinarity, to address the challenges that arise in relation to understanding of the human being, being one of the biomedical disciplines of great relevance.

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Modern neuroscience is the result of the fusion of many traditions

scientific disciplines: anatomy, embryology, physiology, biochemistry, pharmacology, psychology and neurology.

Neuroscience faces the challenge of understanding one of the most important **aspects** relevant aspects of the brain's role in human life and behavior: the problem of consciousness.

Furthermore, in this **21st century,** observing the growing impact that is producing in relation to **diseases of the nervous system** such as: **Cerebrovascular diseases** (stroke), **neurodegenerative processes:** - Parkinson's disease, Alzheimer's disease, **psychiatric disorders ,** schizophrenia depressions-, advances in brain research, its physiology and have increased their pathologies.

The key to the continued relevance of current developments in ***Neuroscience*** lies in adopt a multidisciplinary approach to all problems related *to Nervous System,* being the most complex organ in nature.

Cognitive neuroscience and **emotional intelligence** help us understand the Challenges as opportunities, it allows us **to know** that we all have a NEUROPLASTIC brain , capable of evolving to learn.

A new culture is emerging, the **NEURO culture,** although being so recent, it is still It continues to be discussed, because every science is preceded by the prefix, as it is Neuromarketing , *Neuroeducation, Neuropsychology, Neurographology,* etc.

Therefore, disciplines with diverse downward interests have emerged; unlike ***neuropsychology and cognitive neuroscience ,*** which have interests ascendants.

From the conception of uniting brain, mind and education, **Carroll *et al.*** (1984), They believe that *"the issue of achieving a closer link between research Cognitive and educational practice is addressed in a report by the National Academy of Education, where advances in cognition studies are highlighted as one of the engines for working on educational innovation processes.*

Along these same lines, and focusing on the research carried out by the Cognitive neuroscience, reports prepared by organizations such as the ***OECD*** *(2002, 2007),* ***The Royal Society*** *(2011) and* ***UNESCO*** *(2013).*

Despite the efforts made by various social, political and academics for the consolidation and development of the consilience proposal between the Brain sciences and education, this area of knowledge still reflects a marked disparity between the proliferation of neuroscience studies susceptible to application to education, and the limited influence exerted within the scenarios educational."

Regarding the research gathered by different authors in relation to ***the Teacher training and professional development,*** taking into account **sociocultural factors that**

They have an impact on the professional development of teachers.

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Cuadra-Martínez, David et al. (2021), contribute in their research study to to relate *the development of the professional identity of teachers (PI) in training university students with initial training as a critical period for their personal development and academic.*

4.3. *History and Evolution of Neuroscience.*

Although ***Neuroscience*** currently bases its foundations on knowledge empirical, developed from biological studies of the nervous system, of its structures and functions, encompassing many areas of research, its historical trajectory It begins with the first trepanations in 2500 BC

Its main stages range from *Classical Antiquity* and the *Era From the Middle Ages* until the *Renaissance,* the enigma of its origin remained. Sensory, motor, and mental functions have been a subject of discussion for centuries.

From the ***Scientific Revolution*** onwards, the **Scientific Method** began to be applied to **exploration of the Nervous System.**

It was in the 1960s ***that*** Neuroscience ***was born*** as interdisciplinary study and is currently among the most active in terms of *Neuroscience research in modern Biology.*

The main forerunners who left their legacy to the present are presented. Neuroscience:

*At the end of the **18th century***

ÿ **Luigi Galvani** (1773-1798). Physician, physiologist and physicist, discovered that cells Muscles produced electricity. "Bioelectrogenesis".

ÿ **Franz Joseph Gall** (1758-1828), Anatomist and physiologist. He developed the system phrenological, whereby each psychic faculty would have its seat in a specific group of brain cells. Thus, the entire cerebral cortex would be made up of different "organs".

ÿ **Hermann Von Helmholtz** (1821-1894) Discovered that the electrical activity of Nerve cells are the way to transmit information from one end to the other. a cell, and also from one cell to another.

ÿ **Pierre Paul Broca** (1824-1880) studied several more patients, almost all with lesions in the left cerebral hemisphere, which led him to state one of the best known principles about brain function: *"We speak with "l'hémisphère gauche!"* ***("we speak with the left hemisphere!")***

ÿ **Carl Wernicke** (1848-1904) proposed a new theory of brain function, called connectivism.

According to this theory, only the most basic mental functions, such as Simple motor or perceptual activities have a single location brain region. The connections between the various areas make the functions possible. complex intellectual processes. This notion is known today as *processing distributed* and is possibly one of the most fruitful concepts in modern Neuroscience.

ÿ **Richard Semon** (1859-1918). Proposes the memory refers to the concept of *engram* (" *mnemonic trace"),* referring to the brain changes that underlie memory storage.

ÿ **Korbinian Brodmann** (1868-1918) Described fifty-two areas in the cortex human brain and suggested that each of them has a specific function.

ÿ **Roger Wolcott Sperry** (1913-1994) Biologist, psychologist, and neuroscientist. His Investigations made it possible to determine that, although each of the two The brain hemispheres (left and right) exchange information with each other Through the corpus callosum and other smaller commissures, there are notable differences in the way information is processed between one and the other.

ÿ **Eric Richard Kandel** (1929-1956) Neuroscientist, Neurophysiologist. Nobel Prize of Physiology (2000), research on neurophysiological mechanisms associated with the storage of memory with molecular criteria for the distinction between short-term and long-term memory.
In 2006 he published his famous *In search of Memory: The Emergence of a New Science of Mind.*

ÿ **Walter Rudolf Hess** (1881-1973) Physiologist. Nobel Prize in Physiology and medicine (1949). He discovered the functional organization of the midbrain as coordinator of the activities of the internal bodies.

ÿ **Alan Lloyd Hodgkin** (1914-1998) Physiologist and biophysicist and **Andrew Fielding Huxley** (1917-2012), physiologist and biophysicist, developed research on

the giant axon of squid nerve cells. They shared the ***prize***

Nobel Prize in Medicine 1963 with **John Carew Eccles** (1903-1997) neurophysiologist, through research on the ionic basis of nerve transmission.

IMAGE 10. INFOGRAPHIC. History and Evolution of Neuroscience.



4.3.1. *Levels of Analysis in Neuroscience.*

Studies have progressed significantly, which is why *the Neuroscientists* have determined that the development of the nervous system will be studied in small sections, due to the complexity of their object of study, which have

defined as ***Levels of Analysis*** when performing systematic experimental analyses,

helping to understand how the brain works from the molecular, cellular, and systemic levels.

Behavioral and Cognitive.

IMAGE 11. Levels of Analysis - Molecular, Cellular, Systemic, Behavioral and Cognitive.



The levels of analysis facilitate the study of aspects of the brain, so that

The neural systems they study, or the methods and techniques they use, are different.

ÿ ***Molecular Neuroscience.***

It deals with the roles that the variety of molecules have.

ÿ ***Cellular Neuroscience.***

It is a molecular grouping, which forms cellular complexes with different functions.

ÿ ***Systemic Neuroscience.***

It refers to a set of neurons or circuits that interact with each other to perform a common function.

ÿ ***Behavioral Neuroscience.***

It studies brain function based on behavioral changes, the which were previously observed in experiments with animals and beings humans.

ÿ ***Cognitive Neuroscience.***

It studies the biological processes and aspects that underlie cognition, with a focus primarily on the brain's neural connections and that are involved in mental processes.

4.3.2. Basic and Relevant Brain Structures.

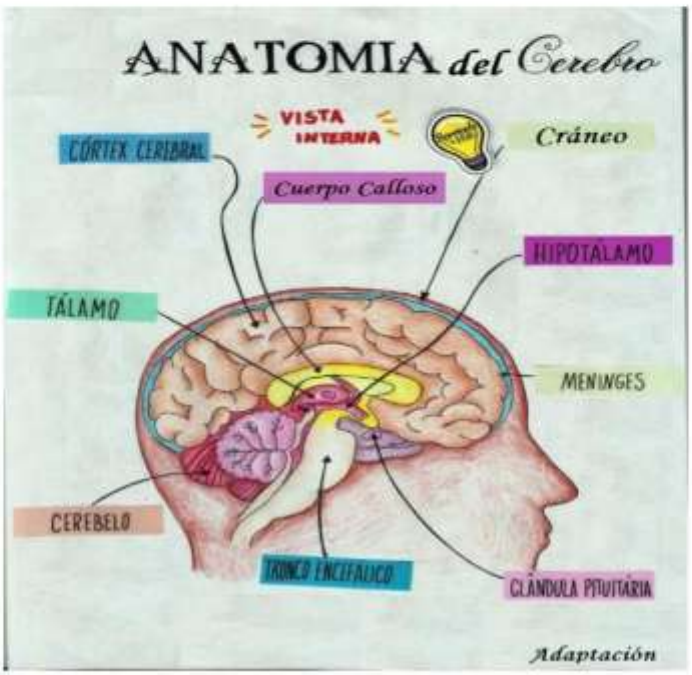
The brain is located in the skull, controlling and regulating different actions and body reactions.

It is very important to know the different parts of the brain, because if we know the origin, the place where the different homeostatic exchanges take place, where

The various biochemical processes at the cellular level are involved in relation to the components

that are involved, such as hormones and neurotransmitters, we will understand from the ***what,*** the ***why*** and the ***how,*** to improve, modify and help ourselves first and then to the others.

IMAGE 12. Internal Anatomy of the Brain.



Adapted source.

The brain participates in the ***nervous system*** and is part of the ***encephalon,*** which is made up of billions of nerve cells, and protected by the skull - bones that form the head-.

The three components of the brain are:

IMAGE 13. Components of the human brain.



Source: Image extracted without copyright.

ÿ **Brain.**

Mass that surrounds the ***brain, cerebellum*** and ***medulla oblongata,*** which is formed by a network of glia, neurons, and nerve pathways—nerve cells contained within of the skull. Within the brain are numerous organized structures together, allowing the brain to function systematically.

ÿ **Cerebellum.**

It is a structure that evolves from the ***rhombencephalon3 ,*** being found in the upper part of the spinal cord - during fetal development will transforming into the structures responsible for performing *the essential functions*

[3] Two structures originate from the **rhombencephalon :** the **diencephalon -** composed of the **thalamus** and the **hypothalamus** - and the **telencephalon** - located above the diencephalon and composed of the **cerebral cortex and basal ganglia .** and **limbic system-.**

For survival and during evolution, it will transform into ***the cerebellum, the pons, brainstem ,*** and ***medulla oblongata.***

ÿ **Brainstem or Cerebral Stem.**

It is cylindrical in shape and is located below the ***brain,*** between it and the ***spinal cord.*** ***spinal cord,*** connecting the latter with the higher thought centers of ***brain.*** It is made up of the ***medulla oblongata,*** the ***pons,*** and the ***midbrain.***

Etymologically, it comes from the Latin *Cerebrum,* meaning ***"that which is in the high head"***

The ***brain*** 's function *is to control voluntary movements and language. -spoken and written-, intelligence, memory, emotions, processing all the information received through the senses.*

It is basic and essential to know *the relevant structures that make up the brain* because on the one hand,

We find that ***the Nervous System is divided into two parts:***

The first is what we call the ***Central Nervous System,*** which is composed of through ***the brain*** and ***spinal cord,*** through which all the nerves that carry the electrical impulses that originate in the brain.

The second part of the nervous system is called the ***Peripheral Nervous System.*** It is called peripheral because it comprises nerves that are in the periphery, that is, in the sides or **around the spinal cord.**

The peripheral nervous system receives electrical impulses from the spinal cord to be distributed to all the other multiple body systems.

The peripheral nervous system is what allows nerve impulses to travel. They come from the brain and reach organs such as the lungs, the liver, the heart and also connects to glands such as the thyroid, pancreas or the adrenal glands.

Thus, the ***peripheral system*** extends the brain's control over all other parts of the body.

The peripheral system has a part that ***functions involuntarily,*** which It's called ***the Autonomic Nervous System.*** It's called autonomic because it functions independently. automatic or independent.

The body's autonomic nervous system works automatically, twenty-four hours a day. hours of the day, every day of his life, trying to maintain a ***Metabolic Balance.***

Achieving this state of ***metabolic equilibrium*** is so important for the body that, of naturally, it will do its best to slow down any internal process that is happening too quickly.

The autonomous system, in turn, is divided into two parts called ***System Sympathetic Nervous System*** and ***Parasympathetic Nervous System*** (Stimulates (excited) and passive)

IMAGE 14. Human Nervous System.

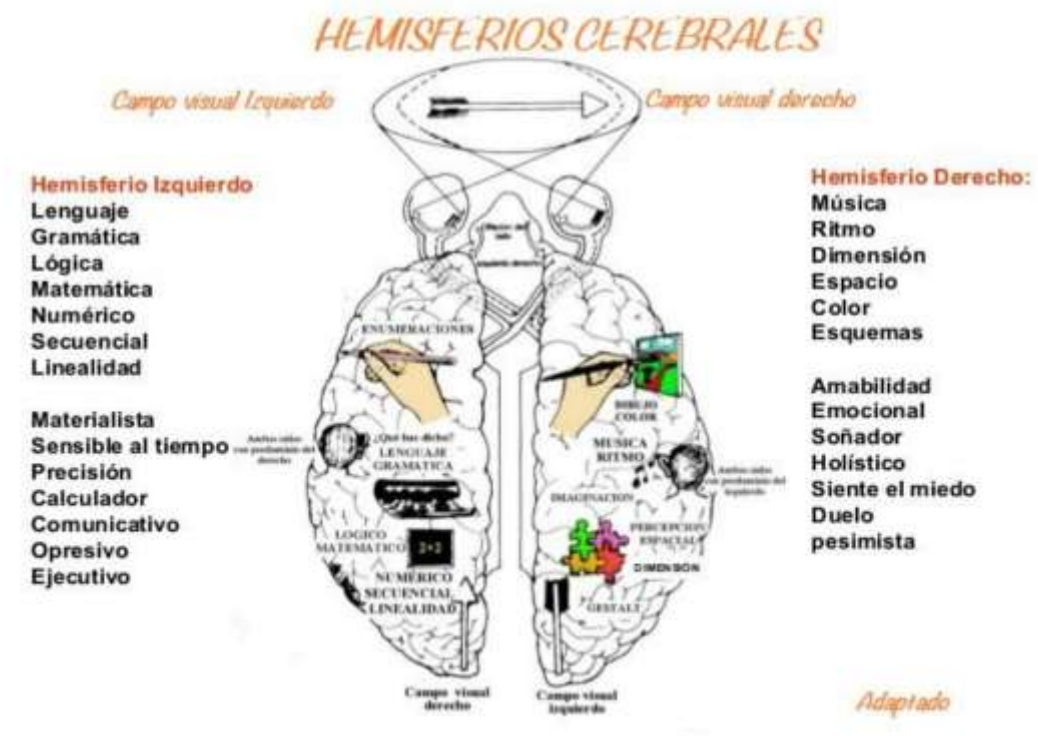


Hemispheres.

Each ***hemisphere*** controls a different side of the body. Thus, the right hand sends and receives signals from the *left hemisphere* and the same occurs throughout the body.

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IMAGE 15. Cerebral Hemispheres.



Source: Image adapted without copyright.

ÿ **Left Hemisphere: LOGICAL.**

It is engaged in ***verbal language,*** related to ***communication, the verbal memory, writing,*** and ***reading.***

The "logical learner" tends to receive more positive reinforcement in the *system current educational,* oriented towards language.

For example: if ***the dominant cerebral hemisphere is on the left side*** *and* ***the eye dominant in law,*** then one has the ability to capture the information visual at any time, even if the situation is tense.

Vision will be a preferred means of learning for people whose eyes

The dominant hemisphere is located on the opposite side of the ***dominant cerebral hemisphere*** and is

They are considered ***"visual learners"***

ÿ **Right Hemisphere: EMOTIONAL.**

This hemisphere processes information by starting with the whole and analyzing the parts.

contextually, it processes through images, rhythm, movement, emotion and

Intuition. Conversely, when ***both hemispheres work together*** optimally

It is said that there is an integrated state and it is key to ***reasoning and***

superior level ***creativity .*** We encounter many children with high

percentage of sustained stress and, therefore, we observe a ***reception blockage and***

interpretation of messages.

Other components of the brain.

FRONTAL LOBE.

It is located at the front of the brain, behind the forehead. ***The lobe***

The frontal lobe is activated more when the task is novel.

CORPUS CALLOSUM.

The ***corpus callosum*** is the structure located deep within the brain and

It connects *the right and left cerebral hemispheres, coordinating the functions* of

both.

HYPOTHALAMUS.

Although it is very small in size, it performs many functions.

The nerve cells in the ***hypothalamus*** produce chemicals that control the release of hormones by the pituitary ***gland .***

For example, it synthesizes different hormones (oxytocin, antidiuretic) and produces hormones that act on the ***anterior pituitary gland,*** stimulating or inhibiting the secretion of The hormones of the ***anterior pituitary gland*** control body temperature, hunger, and thirst. Ultimately, it acts as a control center for the ***Endocrine System.***

It unites the ***Endocrine System*** with the ***Nervous System.***

AMYGDALA.

The amygdala, also known as the ***amygdala complex,*** is a set of of neurons, related to each other, resulting in an *almond-shaped* area that It is part of the limbic system. It is located *deep within the* ***temporal lobes.*** ***of the brain,*** with the amygdala located approximately *at the level of the ears .*

Being interconnected with the rest of the brain, *it functions as a command center. of emotions.*

According to the latest research in neurology, its size is linked with our level of socialization.

CINGULATE TURN.

It is located in both cerebral hemispheres. Along with the parahippocampal gyrus, It constitutes the limbic cortex of the limbic system of the brain.

It plays a role in survival behavior.

PITUITARY GLAND.

The ***pituitary gland ,*** or ***hypophysis ,*** is an ***endocrine gland*** present in the In vertebrates, *it secretes* hormones responsible for *regulating homeostasis and growth.*

It is the master gland, since together with the ***hypothalamus,*** it organizes the complex regulatory function of many other endocrine glands.

The anterior pituitary gland *produces six important hormones:*

1) ***Prolactin*** (PRL, *prolactin)*

2) ***Growth hormone*** (GH),

3) ***Adrenocorticotropic hormone*** **(ACTH),**

4) ***Luteinizing hormone*** **(LH),**

5) Follicle-stimulating ***hormone*** **(FSH)**

6) ***thyroid-stimulating hormone*** **(TSH)**

Brain Areas

Korbinian Brodmann (1868-1918), **a German neurologist,** designed a map of the cerebral cortex in the early 20th century, and **identified 50 regions,** some of which They are involved with language, vision, and sensory processing. Currently, ***The Brodmann map*** continues to be used to locate the data obtained using neuroimaging techniques.

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IMAGE 16. Brodmann areas.

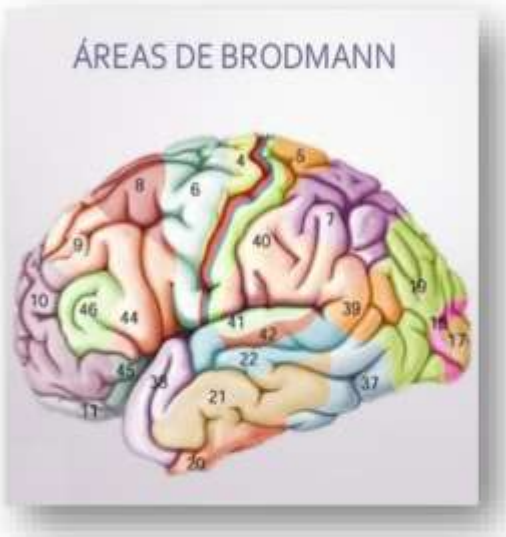
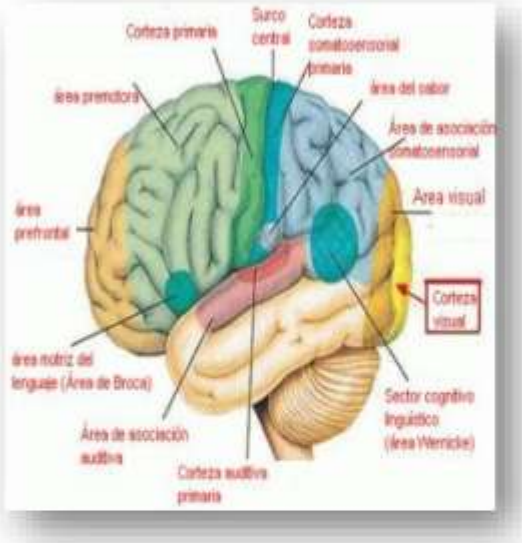


IMAGE 17. Broca's Areas.



Source: Images extracted without copyright.

In the brain we find **Broca's** area[4], which is made up of Brodmann areas **44** and **45** are of great importance for understanding and **generating** language, both spoken and written.

Thanks to these two **areas** we are able to speak, understand what is said to us, writing and reading.

Broca's area is involved in language **production** and **Wernicke's area**[5] participates in the **understanding** of words.

[4] **Paul Pierre Broca** (1824-1880), a French physician, anatomist, and anthropologist, identified areas of the human brain that control language functions, which depend on the integrity of a region in the left hemisphere.

[5] **Carl Wernicke** (1848-1905), German neurologist and psychiatrist. Wernicke's area: Area for language comprehension, located in the upper part of the temporal lobe. He described **sensory aphasia** (impairment of the

Where are they located?

Brodmann's area is located in the region of the **frontal lobe.**

left side of the brain.

In **Broca's area** lies the essence of reading, as it transforms the

grapheme to phoneme.

4.3.3. The Mind.

Even today , ***the mind*** remains a problematic construct within *philosophy.*

the mind and *cognitive psychology,* referring interchangeably to ***representations***

mental and ***psychological skills.***

Etymologically it comes from the Latin ***Mens, mentis, mentem,*** meaning

"think".

There are different *theoretical models* that attempt to explain how ***the***

human ***mind .***

When we think about the mental faculties, which are unique to human beings, we usually think about *the*

language - spoken and written -, *the ability to learn* and to *solve problems*

complex, although there is another that allows us to enrich our social relationships, ***the***

Theory of Mind6 .

language perception), differentiating it from motor aphasia (described by **Paul Broca,** which prevents remembering the movements for the production of spoken or written language, due to a lesion in the frontal lobe).

[6] It is the ability to be aware of the differences between one's own point of view and that of others.

According to this theory, the evolution in children's *cognitive development* begins at end of the first year of age, emerging ***skills*** that are built upon and *enhanced creation of more complex social behaviors,* which is why ***Theory of Mind,*** recently It appears around the age of 4 in a child's life, building upon the foundations of the skills derived from these changes in ***cognitive development,*** being called ***Nine-month revolution.***

A scientific *"false belief"* experiment has been developed as proof of the acquisition of ***Theory of Mind,*** where several children are shown what's inside from a piggy bank, demonstrating that there are 3-year-old children and 6-year-old children who have ***the Theory of Mind,*** developing their social skills of verbal communication, not verbal, facial, etc.

We also encountered ***the Computational Theory of Mind,*** including within ***cognitive psychology,*** which holds that the human mind resembles a information processing system -computers, digital computer-, very similar in its internal architecture.

This idea from ***Computational Theory*** resembles a real model of the mind human and was built from mathematical models, devised by **Alan Turing** (1915-1952), British mathematician, who in 1950, designed the *Turing Test,* thus giving birth to the artificial intelligence.

Computationalism was proposed by **Hilary Putnam** (1926-2016), American mathematician, philosopher, and theoretical computer scientist, in the 1960s.

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This theory was initially based on the theoretical proposals of **Noam Chomsky**

(1928) Linguist, philosopher, political scientist, professor emeritus and his generative grammar7

The computational model is based on ***basic principles,*** which allow

Understanding how the ***mind works.***

ÿ The human mind is conceived as a very complex biological machine, which

It handles the processes and symbols.

ÿ Processing information, both for a computer and for the

The human mind follows a sequential process and rules of calculation -algorithms-

ÿ From a material point of view, the human mind -cognition- and the computer are

different structures, although functionally equivalent.

The mind *is conceived as three types of processes:*

ÿ Conscious processes.

ÿ Unconscious processes.

ÿ Procedural processes.

Mental processes *are classified into four levels:*

1. Receiving information from perception.

[7] It argues that along with the specific sentence construction rules of each language, there are more basic rules - common and innate to all languages - that explain how children easily learn a language from a young age.

2. Storing information in memory.

3. Processing information through beliefs.

4. Translation of information to act from the will.

Are Mind and Thought the same thing?

Thought is the ability ***that*** *people have to form* ***ideas and representations*** *of reality in your* ***mind.*** Therefore, thoughts, ideas, are in ***the mind,*** occupying a virtual space.

To conclude this section, and according to the different theories that have been As stated, I adhere to the behavioral theory, based on the theories of **Ivan P. Pavlov** (1849-1936), which deals with classical conditioning, helping to understand the processes of associative learning.

A notable influence of the scientific method is observed in Psychology.

According to ***behaviorist theory, learning*** is defined as *the acquisition of new behaviors. Reinforcement theory consists of describing the process by which the continued association of a certain response to a certain stimulus, when the subject obtains a prize or reward (positive reinforcement).*

Factors that influence ***behavioral learning are observed,*** such as Circumstances (variables) that, to a greater or lesser extent, condition the process. Among The variables include the cognitive, affective-social, environmental, and other factors.

study organization. All of these must be taken into account in the research of present study.

4.4. Conceptual framework.

This section will develop the concepts of the different variables used. in the research study to expand and update not only knowledge, but also a contribution that can support the application ***of Neuroscience*** in daily life ***University professor/ tutor.***

4.4.1. Neuroeducation.

As a discipline, it studies the ***functioning of the brain during the process of teaching and learning,*** *analyzing the development of the human brain and its reaction to external stimuli, which are subsequently translated into knowledge.*

It is also known as ***Neuropedagogy*** or ***Neurodidactics,*** promoting a complete integration with the educational sciences that relate to development neurological.

Its ***main objective*** is to optimize the teaching processes and learning, by being based on knowledge of how the human brain works.

The ***main factors*** *involved in* ***Neuroeducation*** *are:*

ÿ Neuroplasticity and Neurogenesis.

- ÿ Mirror Neurons.
- ÿ Multiple Intelligences.
- ÿ Unique and particular brain.
- ÿ Emotions.
- ÿ The ability to learn.
- ÿ Attention.
- ÿ Decision making.
- ÿ Play as learning.
- ÿ Participatory learning.

Therefore, it can be deduced that ***a new education is both possible and indispensable.***

A new vision is needed to improve teaching and learning processes.

based on scientific knowledge about brain development and function

human. It is based on providing educational strategies and technologies.

Neuroeducation proposes that teachers should have a ***marked***

knowledge of each student's neural process, in order to evaluate it accordingly

their cognitive capacity and evolution.

The term ***Neuroeducation*** arises from the work carried out by **Odell** (1981), in the

academic context, *"to allude to the need to search for educational strategies*

compatible with the brain."

Subsequently, neuroeducation was defined by **Battro and Cardinali** (1996), those who coined the term in the Spanish language, defining it as *"the use of the scientific research to confirm the best pedagogical practices."*

Neuroeducation is part of a new interdisciplinary ***field ,*** which *"is aimed at promoting greater integration between the educational sciences with those that deal with human neurocognitive development."*

Neuroeducation, educational neuroscience , and ***MBE8*** all share a common pillar common core by emphasizing the relationship between neuroscience and education.

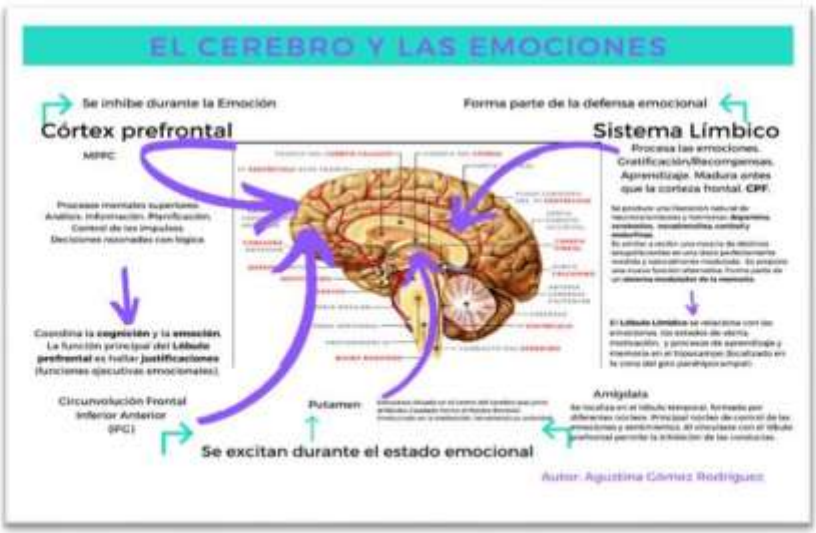
Education must adapt to the historical and contextual moment. We are living in a time that requires us to consider being open to new proposals. of change from the point of view of the evolutionary development of *emotional intelligence,* to solve the problems of the social crisis and face the various challenges that presents the current environment.

Therefore, it requires teachers to raise their awareness so that, in a professional and Personally, start reviewing your resume (your CV), and include the dimensions regarding their training in matters related to **Emotional Intelligence, the NLP,** and everything related to **experiential learning and EMOTIONAL.**

8 The term **MBE,** according to Ferrari and McBride (2011) as Tokuhama Espinosa (2011, 2015) It evolves from a category similar to **neuroeducation** to one that positions it as the matrix of the transdisciplinary approach that underpins ***the science of mind, brain, and education.***

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IMAGE 18. The Brain and Emotions.



Source and Design: Prepared by the author using data extracted from various sources.

"Teaching without knowing how the brain works is like trying to design a glove without "I have never seen a hand" Leslie Hart

4.4.2. Academic obsolescence.

Current academic programs must adapt to evolving trends in

in relation to learning needs in terms of personal development to understand social behaviors.

There are multiple factors involved in this variable, due to the changes that occur constantly and at an ever-increasing rate.

The lack of updates is not always due to a lack of resources, but to a lack of interest.

or being in the *"Comfort Zone"* that comes with having a full-time teaching position

complete, allowing the teaching of topics acquired from the beginning of the training of

Professor/Tutor, fostering a predisposition to avoid engaging with current issues,

leaving aside the background updates.

Furthermore, this approach favors and strengthens the teaching of outdated and obsolete subjects.

teaching strategies that are out of step with the times we live in.

This is more prevalent among teachers/tutors who have

with a consolidated academic track record based on educational content.

4.4.3. Personal development.

Personal development is the manifestation of any introspective process in which

It's about discovering one's own identity in order to uncover talents and improve health.

Change your lifestyle, and everything necessary to live in harmony between body and mind

mind. From this arises ***psychological well-being,*** which, although a broad concept and

This complex, which originated in the United States, is related to different variables that include

subjective and psychological social dimensions, as well as behaviors

related to people's health that affects how they act and think

in a positive way.

Psychological well-being *is* generated from healthy habits and is considered

as a precursor concept to current models of ***Positive Psychology,*** having a

fundamental role in the prevention and recovery of physical condition, health mental and emotional, including self-acceptance, the perception of control over what It happens around and social skills.

The constructs ***Psychological Well-being*** and ***Subjective Well-being*** refer to ***two different branches in the study of well-being:***

The first focuses on the study of *personal growth,* the *purpose in life* and *self-realization* ***(Psychological Well-being*** as a *eudaimonic perspective9)*

The second focuses on the experience of satisfaction with one's own life *(factor cognitive),* high level of positive affect and low level of negative affect *(factors affective)* ***(Subjective Wellbeing*** as *a hedonistic perspective10).*

It follows that the constructs ***Happiness11*** and ***Subjective Wellbeing12*** can to be considered as equivalent terms.

Carol Ryff (1989) is an American psychologist recognized for her research and studies Psychological *Well* ***-being,*** as well as ***Psychological Resilience.***

[9] Eudaimonia (from the Greek ÿÿÿÿÿÿÿÿÿ) is a term that refers to the fullness of being, and is usually translated as "happiness", understood as personal growth, self-determination, achievement of goals, meaning of life, actualization of personal potentials and self-realization.

[10] ***Hedonism*** (from the Greek ÿÿÿÿÿ), for its part, maintains that pleasure is the greatest good, the one that brings the individual the greatest happiness.

[11] For **Seligman, *happiness*** would be achieved through three paths: what we could call the *good life (pleasant Life), engagement* life , and a *meaningful life ,* although there is no key that automatically and necessarily leads to happiness, but rather it seems to require a series of prior conditions, not yet well established.

[12] ***Subjective happiness*** or well-being, **Bar-On** (1997, 2000) indicates, in his ***model of emotional intelligence*** As a personality trait, it is an aptitude that, along with optimism, forms part of the *general mood,* and which would consist, specifically, of the ability to enjoy oneself and others, to have fun, to feel satisfied with one's own life and to experience positive feelings.

He developed a multidimensional model of objective assessment, the Scale of Psychological Well-being - *Ryff scale* or ***EBP -*** questionnaire to measure *well* ***-being Psychological analysis*** of people and extracted six basic criteria for achieving self-realization and people's potential. *This* ***questionnaire*** *relates age, sex, socio-economic and ethnicity* (Ryff and Singer 2008)

"Living life in a state of positive ***emotions*** *is creating fertile ground for the*

"May the seed of our desire grow strong and bear fruit."

4.4.4. Academic development according to the Pedagogical Model.

The academic development of the teacher has a significant influence on the current situation. pedagogical model, in accordance with the standards established by the Ministry of Education of each country, since they are governed by international treaties, where the study programs, It involves complex processes.

Throughout history, countless investigations have been carried out scientific, related to ***learning,*** which led to the emergence of different ***pedagogical models ,*** each with a unique ***approach ,*** considering which is the best way of teaching and learning.

Each ***educational model*** must observe an epistemological and anthropological stance. sociological, ontological, psychological, and pedagogical, to understand what system will put in march and thereby achieve the proposed objectives.

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In Spain13, the ***current educational model*** fosters technological vocations without take into account the development of their personal and emotional skills.

*The main **pedagogical models14** that are currently used in education are:*

- ***Traditional Model.***

  The teacher transmits knowledge and the student has a passive role.

- ***Behaviorist Model.***

  It is expository-demonstrative. The teacher is the central figure, and the student follows in their role. passive.

- ***Constructivist model.***

  The teacher assumes the role of guide and the student is the protagonist of their own learning. learning.

- ***Experiential-romantic model.***

  Focused on humanism. The student learns with an active role and the teacher intervenes when required.

- ***Cognitive-developmental model.***

  The teacher is a facilitator/mediator and the student has an active role.

[13] The **Organic Law on Education** (LOE), of 2006, and the **Organic Law for the Improvement of Educational Quality** (LOMCE), of 2013, which modifies it, are currently the basic rules that regulate the educational system of Spain and define its structure.

[14] They were discussed in the Abstract and will be expanded upon in the Thesis.

Therefore, each ***model ,*** throughout its evolution and validity, has its own characteristics. This particularity makes him a protagonist with a valuable contribution, according to the context that has been implemented.

Educational Approaches.

The approaches of the 20th century highlight *two proposals.*

1. *It proposes a change in teaching towards learning.*

2. *It is oriented towards the search for more meaningful teaching.*

ÿ ***Behavioral Approach.***

It offers an empirical-analytical and Neo-positivist epistemology. It highlights the competencies as key behaviors for competitiveness.

ÿ ***Functionalist Approach.***

Its epistemology is based on Functionalism. It emphasizes that competencies These are attributes of people to achieve their professional goals and labor.

ÿ ***Constructivist Approach.***

Its epistemology is based on Constructivism. It emphasizes competencies. These are skills, knowledge, and abilities that will help resolve situations conflictive in professional and work life.

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ÿ ***Complex Approach.***

Its epistemology is based on Complex Thought. It emphasizes that the

Competencies are complex processes of performance in the face of difficulties, where

They resolve issues ethically and competently, achieving personal and professional fulfillment.

economic well-being and quality of life in a harmonious environment.

According to the current diagnosis, it can be inferred that the incorporation of education

From the empirical and neuroscientific component to philosophical reflection, it could be suggested that *the* ***Neuroeducation*** could have its own field of study.

However, "own" is not synonymous with "new", nor is it that it should

to study alone.

This means that this need to provide an approach to the issues

related to the possibilities of action and decision-making of human beings, now

has expanded, taking into account what the advance of knowledge of the brain tells us

It provides.

The questions may be the same: *How to develop education in*

What is the role of human beings? Why are we social beings? And even , *what is the weight of...*

What are the emotional components in learning?

And now, these basic and fundamental issues in the changing environment and

Given the dizzying pace of life we live in, they will consider not only philosophical reflection, but also the

advances and discoveries in the human brain.

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Based on the above, it can be argued that academic development will have an impact favorably in university professors/tutors when having an approach with topics that help with self-knowledge and thereby benefit the students.

Neuroscience , starting in the 1960s, uses technology and Knowledge related to the brain - nervous system - to solve practical problems, primarily in *clinical, work ,* and ***educational settings,*** fostering an approach to the scientific research.

The problem is not the problem itself, but the cause that originates it.

Remaining anchored to outdated paradigms that have no place in the ***21st century,*** after *a pandemic* that affected not only physical and emotional health, but also the economy global, the way of relating and socializing, the way of working - technology It advanced digitization, education policy, etc. by 20 years.

So how do we address the lack of interest from teachers/ tutors? university students?

An ***interactive (Active Method) and multidisciplinary model*** should be included where Learning outcomes should be the central focus of educational policy.

Investing in preparing university professors/ tutors in disciplines that improve their responsibility and performance in the face of the new normal.

Emphasize ***personal development topics,*** without eliminating the cultural aspect, although Everything must converge towards a ***new model of experiential and practical learning,*** where Memory is nourished by experiences, with creativity and problem-solving skills.

Introduce strategic alliances, train teachers with ***new paradigms*** In accordance with the current historical times, ***update teaching materials*** updating them to the student's basic needs. And above all, ***evaluating with inclusive methodologies*** to reduce stress for both teachers and students, which This will allow for a closer relationship between the two, in the search for learning solutions. innovators.

Teaching and learning are often used as if they expressed the same intention. And in reality, the initial and final objectives are quite different. *Teaching is part of the model. traditional,* by proposing as the main axis of education, that of transmitting a set of knowledge. *The constructivist educational model* focuses its attention on the student as the main protagonist of the educational process, being the active element in the learning and allowing the teacher to interact with the student.

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CHAPTER 5. METHODOLOGICAL FRAMEWORK.

5.1. Research design.

Since the objective of the study will be to analyze the ***"Academic obsolescence in Neuroscience of the Tutors of the Graduate and Business School located in Madrid, Spain and its impact on personal and academic development will be addressed using a design Non-experimental ,*** which will be applied transversally , and considering that ***the topic of*** Since ***the research*** has ***sufficient theoretical support, a descriptive research*** to understand the phenomenon under study in detail.

According to **Hernández, et al.** (2010), non-experimental research *"is the which is done without deliberately manipulating the variables; what is done in this type of Research is observing phenomena as they occur in a natural context, in order to after analyzing them"* (p. 70).

These same authors point out that cross-sectional research designs *"They collect data at a single moment, at a single point in time. Their purpose is to describe variables and analyze their incidence and interrelation at a given moment"* (p. 289)

The Methodological Framework must answer the research questions of the study, compare with the hypothesis developed in ***Chapter 3 Objectives of the Research*** and achieve the study objectives.

5.2. Type of research.

According to the types of research used in a study, it has been opted for the ***Qualitative Approach,*** with a ***Descriptive and correlational level of study.***

Depending on the depth and scope, the Research Level will be:

Observe, describe, and relate.

Direct observation allows us to link the data obtained with the perception that It is obtained from the population and will then be expanded and verified with that obtained through the indirect observation.

The description allows one to reach a level of depth, based on empirical evidence and The relationship between the variables will demonstrate their influence or impact on the population and/or study sample analyzed.

5.3. Population and sample.

The total population corresponds to ***40 Professors/ Tutors from the Graduate School and Business in Madrid.***

From the total population, a ***sample of 22 teachers/ tutors*** was taken . have responded to the Questionnaire included in the ***Theoretical Framework section, sub section 6.3.1. Questionnaire*** and ***6.3.2. Graphs and Tables*** obtained.

The sample is not altered.

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I collect and interpret the information, so the research study will be

Non-experimental, since in the proposed research study, no experimentation will be carried out. experimental research.

To evaluate the sample obtained, the following formula is used:

IMAGE 19. Formula for extracting the sample size.

$$n = \frac{N * Z_a^2 * p * q}{e^2 * (N - 1) + Z_a^2 * p * q}$$

Source: Extracted from a YouTube video.

The formula that will be used to find the sample size is presented below.

according to the data that will be provided and that were obtained from the information collected.

IMAGE 20. Formula Factors.

n = Tamaño de muestra buscado.

= Desired sample size.

= Population or Universe Size.

= Statistical parameter that depends on the Confidence Level (CL).

= Maximum acceptable estimation error.

= Probability of the studied event occurring (success).

= (1 –) = Probability that the studied event will not occur.

Source: Extracted from a YouTube video.

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The image below includes the factors of the formula and their meanings.

each variable.

IMAGE 21. Confidence Level.

Nivel de confianza	Z alfa
99.7%	3
99%	2,58
98%	2,33
96%	2,05
95%	1,96
90%	1,645
80%	1,28
50%	0,674

Source: Extracted from a YouTube video.

The image corresponds to the percentiles in terms of the ***Confidence Level*** that is will be used in the formula to find the actual population size. The sample corresponds to the 40 Professors/Tutors.

IMAGE 22. Calculation of Finite Population Size.

Parameter	Worth
N	**40**
Z	1,960
P	50.00%
Q	50.00%
and	3.00%

Sample size "n"= 38.59

Source: Author's own work. Data extracted from a formula adapted to the population under study.

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The total population of ***Professors/ Tutors of the Graduate and Business School from Madrid, Spain,*** corresponds to **40,** yielding a sample size equal to **n** of **38.59**

However, given that the ***actual population is 40,*** in the present ***research study When using the Questionnaire,*** a ***sample of 22 Teachers/ Tutors*** was taken , the

The formula is presented as follows:

IMAGE 23. Sample Size.

Parameter	Worth
N	**22**
Z	1,960
P	50.00%
Q	50.00%
and	3.00%

Sample size "n"= 21.58

Source: Author's own work. Data extracted from a formula adapted to the sample under study.

Taking a ***representative sample of 22 teachers/ tutors*** from the ***School of Postgraduate and Business Studies in Madrid, Spain,*** applies the formula with the extracted variables

From the data provided, a sample size equal to **n 21.58%** was obtained

5.4. Data collection techniques and instruments.

For the research study, it is proposed to apply a **Questionnaire,** which

will provide initial data, allowing conclusions to be drawn according to what is indicated in the

Chapter 6 Practical Framework, *sub-section 6.3.1.* Questionnaire.

5.5. Procedures.

The ***step-by-step method*** that will be used to reach the set objective is carried out.

ÿ **Observation.**

The first step has been to identify the subject of the study based on observation, supported by the formulation of relevant questions to understand the approach and research guidelines for the study.

ÿ **Methodological research.**

Next, the most significant information is gathered, extracting data from sources primary, secondary and tertiary.

ÿ **Formulation of the Hypothesis.**

Once the first variable has been identified, which is the problem to which we want to give solution, and translated into the form of a question, will become affirmative for to deduce the hypothesis, which will be validated throughout the investigation, or not, through experimentation to confirm that what is being studied is true and real.

ÿ **Data analysis.**

It is time to analyze the data gathered throughout the investigation.

It gives order to grounding and justifying theory in practice.

ÿ **Conclusions.**

Depending on the approach, statistics and logical arguments can be provided. will lend credibility to the study conducted.

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CHAPTER 6. PRACTICAL FRAMEWORK.

Based on the information gathered, using the instrument used to provide concrete and reliable data from a survey of a population of *40 tutors University students* and answered at the time of conducting the study by ***22 Tutors/ Professors*** The Practical Framework is developed ***at the Graduate School of Business in Madrid,*** Spain.

Its main purpose is to gather basic information in order to **evaluate and assess their educational level** and **obtain data on their interest in further training on Neuroscience and how it can positively impact your teaching.**

Although the results are not representative by Master *'s Specialization,* decided to conduct the analysis based on the modules they tutor: *(Human Resources, Marketing, Administration, Hospitality and Tourism, International Strategic Management, Neuropsychology),* since their perspective is considered important, as it is the representation of the thinking of a portion of the professionals who work in the same university context, of a Graduate and Business School, in Spain.

Furthermore, by fulfilling such different roles, since they interact with others Tutors/Professors and students from different Master's programs in a diverse way, taking into account some occasions a completely opposite opinion.

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6.1. Timeline of the Study Contribution Proposal.

The data collected throughout the exhibition is inserted according to the research of the study.

Suggested proposal From September to December 2021

Table 1. Proposed Timeline -Gantt Chart-

PROPOSAL	Months	SEPTEMBER`21				OCTOBER`21				NOVEMBER`21				DECEMBER`21			
	Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Introduction + Review and Knowledge update																	
Discussion groups																	
Content development																	
Questionnaire Development																	
Pilot Test																	
Gathering data and information on teaching																	
Preparation of strategic proposals																	
Results																	
Presentation of the Proposal																	
Review and adjustments of Activities																	
Preparation of the first report																	
Strategy training																	
Description of results																	
Preparation of the final report																	

Source and Design: Own work.

The ***schedule*** presented is part of the suggestion, ***proposal of activities*** that could be carried out by the ***professors/ tutors of the Graduate School and Businesses in Madrid, Spain.*** Suggested start date: September; end date: December

as a Pilot Test, lasting 16 weeks and with a weekly virtual meeting

(detailed in the ***2021 Suggested Activities Table),*** which includes the activities

to be carried out, and the objectives that are intended to be achieved in said meetings and work later.

6.2. Suggested activities.

The proposed activities are inserted according to the contribution stated in the ***Introduction, Planning Stage Section, Contributions Variable,*** forming part of the suggestion, since it will not be applied to the studied population.

The proposed activities arise from the ***Questionnaire*** carried out on the ***22 Professors/ Tutors from the Madrid Graduate and Business School,*** who have provided suggestions on the strategies they use and could use to improve the current situation regarding providing solutions not only in personal and academic development of each teacher, but to motivate university students to improve with That, academic performance.

Various activities are proposed that will be in accordance with the Schedule, according to the resources that will be used and the objectives that are to be achieved within the established period which will run from September to December inclusive of 2021.

It will conclude in the last virtual meeting, with the ***preparation of the final report.*** where the observed observations and suggestions for improvements will be included.

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Table 2. Proposed Activities 2021

PROPOSED ACTIVITIES 2021 **Responsible: *Agustina Gómez Rodríguez***		**MADRID GRADUATE SCHOOL OF BUSINESS.**		
ACTIVITY	**MONTH**	**TIMELINE OF RESOURCES**		**GOALS**
INTRODUCTION TO THE NEUROSCIENCE	SEPTEMBER 21 **First Monday from 8 to 9 pm Technological.**			To train teachers/tutors in including conflict resolution techniques and psychological training.
STRATEGIES ACADEMIC	OCTOBER 21	**First Monday from 8 to 9 pm**	**Technological and Case Studies.**	ÿ Data analysis. ÿ Addressing emotional development and the personalization of knowledge. ÿ Participatory forum. ÿ Gamification, videos, documentaries. ÿ Incentivize with real cases. ÿ Main benefit: source of motivation. ÿ Explore alternatives and highlight the positive aspects. ÿ Reflection with film analysis. ÿ Debates, feedback, search for information. ÿ Intrinsic and extrinsic motivation.
CONTRIBUTION IN FORUMS OPINION	NOVEMBER 21 **First Monday from 8 to 9 pm Technological.**			To foster, promote, and encourage the importance of Neuroscience as knowledge in learning and motivation in teachers.
WORK OF CONCLUSION	DECEMBER 2021 **First Monday from 8 to 9 pm**		**Technology and data from sources primary and secondary.**	To provide teachers/tutors with programs on Neuroscience in order to acquire knowledge that facilitates empathetic communication skills and motivation.
MEETING VIRTUAL	DECEMBER 21 **Last Monday from 8 to 9 pm. Technological.**			Final report, observations and suggestions for improvements.

Source and Design: Own work.

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6.3. Results. Questionnaire. Graphs and Tables.

As a starting point, it is important to conceptualize, define, and state the operational aspects of the method, including the techniques, procedures, and tools used. They are used during the research process.

It is based on the idea that problems are solved efficiently by identify and correct the root causes of the problem, instead of focusing on its symptoms.

The short-term consequences of not taking action are carefully observed. They are addressing immediate measures to alleviate the detected problem.

The instrument used was a **questionnaire** where questions were developed, of open and closed type, which were answered by a ***Sample of 22 Teachers/ Tutors*** out of a ***total population of 40 teachers/ tutors.***

The ***IMAGE*** has been included in the Population formula, ***Chapter*** 5, ***Section 5.3. Calculation of Finite Sample Size*** from the ***total population of 40 Teachers/ Tutors*** such as those from the ***Sample of 22 Teachers/ Tutors from the School of Postgraduate and Business Studies in Madrid.***

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

6.3.1. Questionnaire.

Table 3. Questionnaire.

SURVEY OF TUTORS AT THE MADRID GRADUATE AND BUSINESS SCHOOL
A.- You are a tutor in the area
1. HUMAN RESOURCES 2. MARKETING 3. ENVIRONMENT 4. ENGINEERING 5. TOURISM 6. NEUROPSYCHOLOGY 7. ADMINISTRATION 8. OTHER.
B.- Years of experience as a tutor in the area
1. Less than 5 years 2. Between 5 and 10 years old. 3. More than 10 years.
C.- Highest level of education achieved
1. Bachelor's degree. 2. Master's degree 3. Doctorate. 4. Other.
D.- Gender
1. Woman 2. Man 3. Other.
E.- Age
1. Between 30 and 40 years old 2. Between 41 and 50 years old 3. Between 51 and 60 years old

4. Over 60 years old.

F.- Have you considered expanding your knowledge of Neuroscience?

Yeah

No

G.- Do you think Neuroscience can help you manage your emotions?

Yeah

No

H.- Do you think that Neuroscience could help you in your teaching tasks?

Yeah

No

I.- Do you have strategies to motivate university students?

Yeah

No

J.- Indicate or list the strategies you use to motivate your university students.

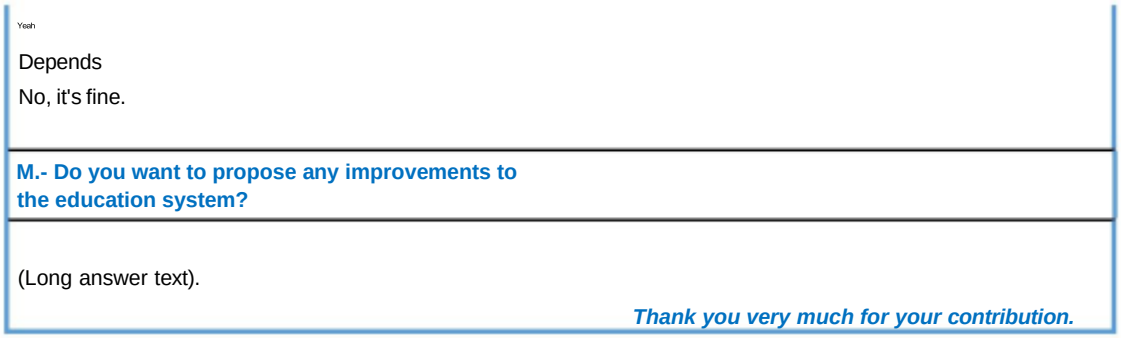
(Short answer text).

K.- What degree of importance could Neuroscience have in your professional life?

1. Many
2. Little.
3. None

L.- Do you perceive that the current educational system needs experiential and emotional learning?

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Yeah

Depends

No, it's fine.

M.- Do you want to propose any improvements to the education system?

(Long answer text).

Thank you very much for your contribution.

Source and Design: Questionnaire. Questions asked about the proposed topic of study. Original work.

6.3.2. Graphs and Tables.

The **graphs from the survey** conducted using **Google Forms** are provided , and I indicate **The variables** that have been used will be listed, and then **the graphs of the responses** will be shown. **obtained and the representativeness of the tutors/teachers,** according to the SPSS Program - IBM-

Survey sent to ***40 tutors/ professors of the Graduate and Business School from Madrid, Spain.***

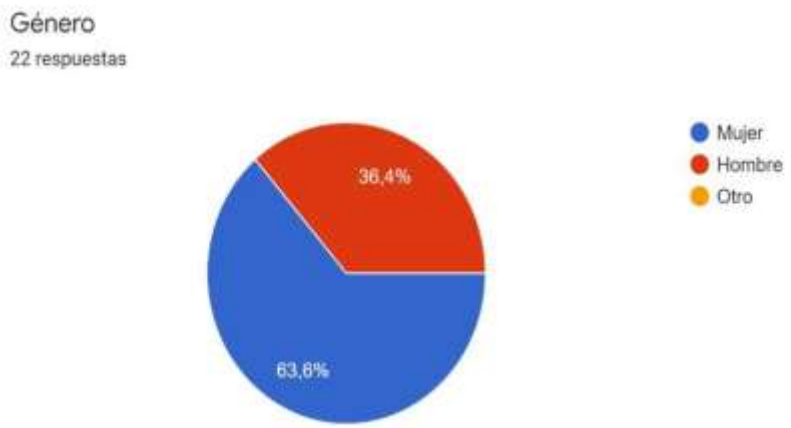
A ***representative sample*** is taken from a ***population of 40 teachers/ tutors.*** ***from the study responding 22 tutors*** residing in Madrid, Spain.

SURVEY GRAPH 1 -GENDER VARIABLE-.

This graph shows, as a representative data point, that **63.6%** of the tutors The respondents **are women.**

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

GRAPH 1. Gender Variable.



Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

SURVEY GRAPH 2. -AGE VARIABLE-.

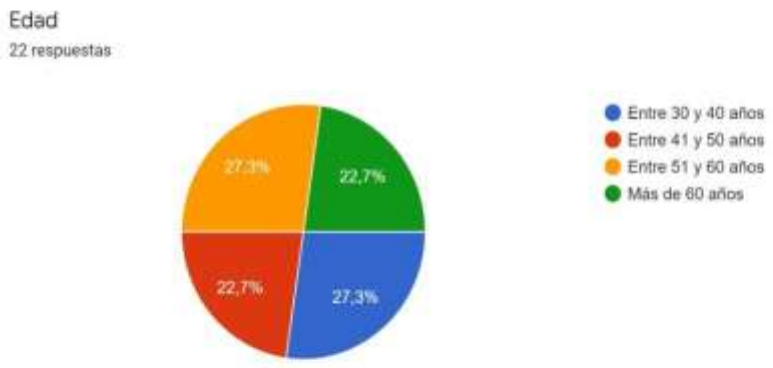
This graph shows, as a representative data point , that **22.7%** of the Teachers/Tutors are **between 41 and 50 years old, matching the percentage among Tutors over 60 years old.**

Then the remaining **27.3% is divided between those aged 51 and 60,** with the percentage being equal **between those aged 30 and 40.**

The age range corresponds to a chronological band between **30 and 60 years,** resulting in a preference for this age range, with **30/40 years prevailing over 51/60 years,** giving an average of **54.6% over 45.4% between 41/50 and over 60 years old.**

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

GRAPH 2. Age Variable.

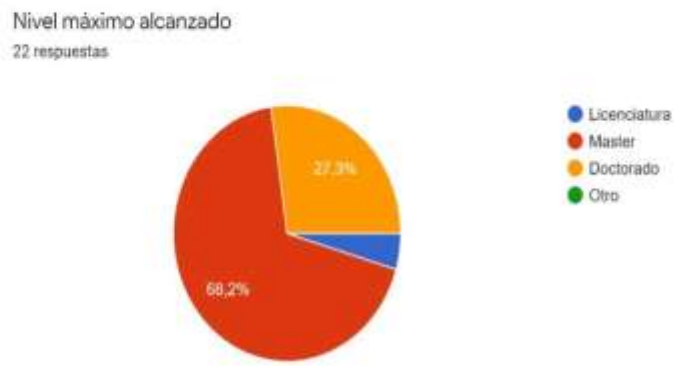


Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

SURVEY GRAPH 3. -VARIABLE Academic level achieved-.

This graph shows, as a representative data point, that **68.2%** have the **level academic attains a Master's degree,** about **27.3% with a doctorate** and the remaining **4.5%** have Bachelor's degrees.

GRAPH 3. Variable: Academic level achieved.



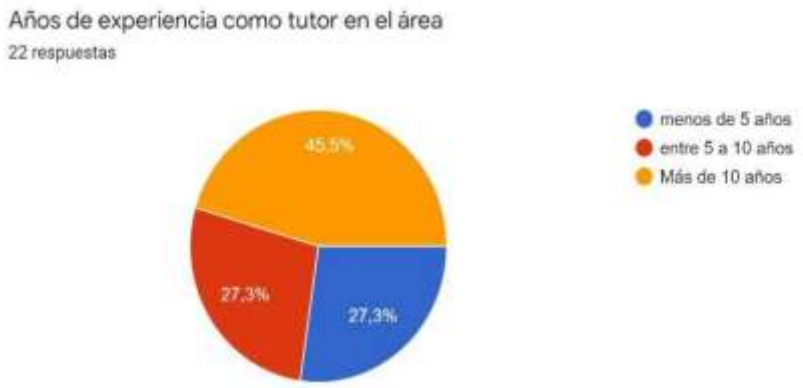
Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

SURVEY GRAPH 4. -VARIABLE years of experience as Professor/Tutor-.

This graph shows, as a representative data point, that **45.5%** have a academic experience **of more than 10 years.** Then 54.6 **%** is distributed equally in teaching experience of **less than 5 years (27.3%)** and **between 5 and 10 years (27.3%).**

GRAPH 4. Variable: Years of experience as a Tutor.



Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

SURVEY GRAPH 5. -VARIABLE Area Tutor-.

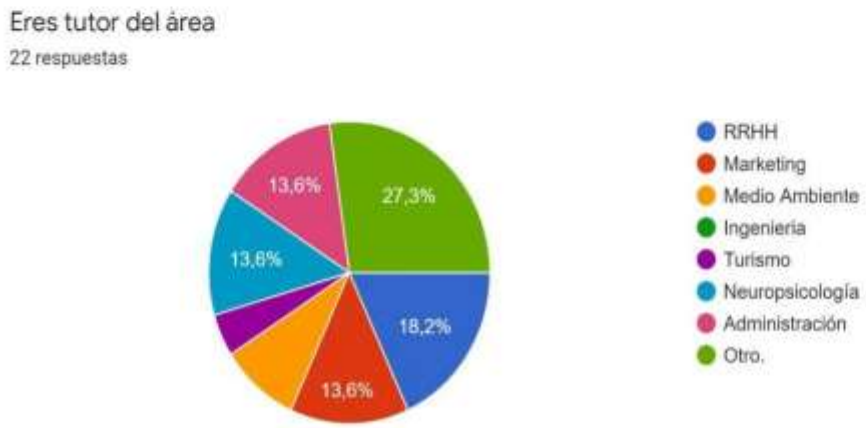
This graph shows, as a representative data point, that **27.3%** are Professors/Tutors from **areas other** than those indicated in the survey.

It is important for the research study to indicate that **59%** is representative . which has been categorized as follows: **18.2% HR; 13.6% Marketing; 13.6%**

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

Administration and **13.6% Neuropsychology,** leaving a remainder of **Environment** and **Tourism,** which makes up the **remaining 13.7%.**

GRAPH 5. Area Tutor Variable.



Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

The following graphs provide **qualitative data** regarding the need for **to update oneself in Neuroscience.**

SURVEY GRAPH 6. -Qualitative VARIABLE: Expand knowledge on Neuroscience-.

This graph shows, as a representative data point, that **72.7%** out of **27.3%.** consider **expanding your knowledge of Neuroscience.**

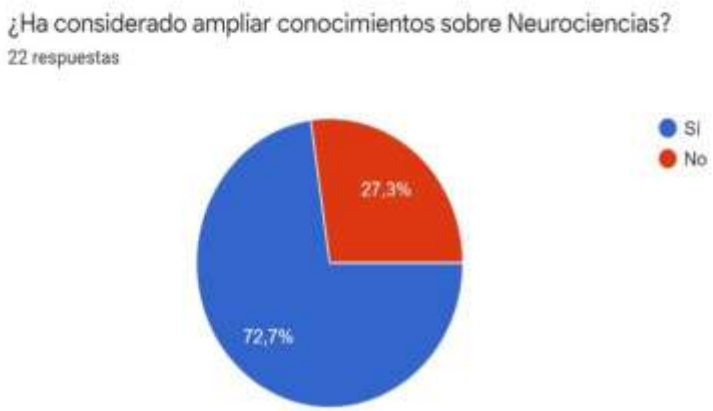
RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

This high percentage suggests that further research on the

Updating training in Neuroscience will allow for ***increased performance .***

Academic *of the Tutors of the Madrid Graduate and Business School.*

GRAPH 6. Qualitative variable: Expand knowledge about Neuroscience.



Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

SURVEY GRAPH 7. -Qualitative VARIABLE: Neuroscience

They help manage emotions.

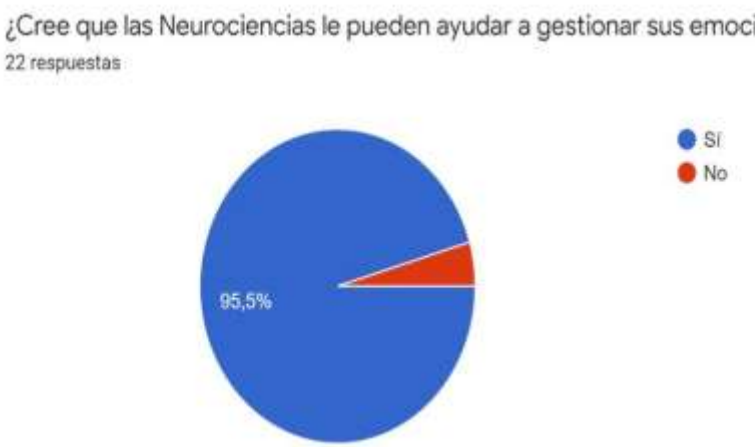
This graph shows, as a representative data point, that **95.5%** of the tutors

Those surveyed at the Madrid Graduate School of Business believe that

Updating and training in Neuroscience will help you manage your own emotions.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

GRAPH 7. Qualitative variable: Neuroscience helps to manage emotions.



Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

SURVEY GRAPH 8. -Qualitative VARIABLE: Neuroscience

They help with pedagogical tasks.

This graph shows, as a representative data point, that **95.5%** of the

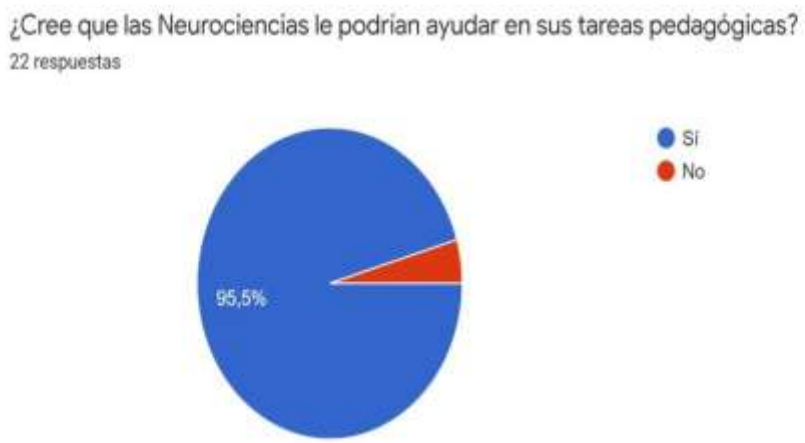
Professors/ Tutors surveyed from the Madrid Graduate and Business School,

He believes that **Neuroscience will help him in his pedagogical tasks,** being a fact favorable for their academic updating.

Furthermore, according to the questionnaire results, most use strategies to Motivating students, although they have not yet achieved favorable results because there is no... a deep understanding of EI

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

GRAPH 8. Qualitative variable: Neuroscience helps in pedagogical tasks.



Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

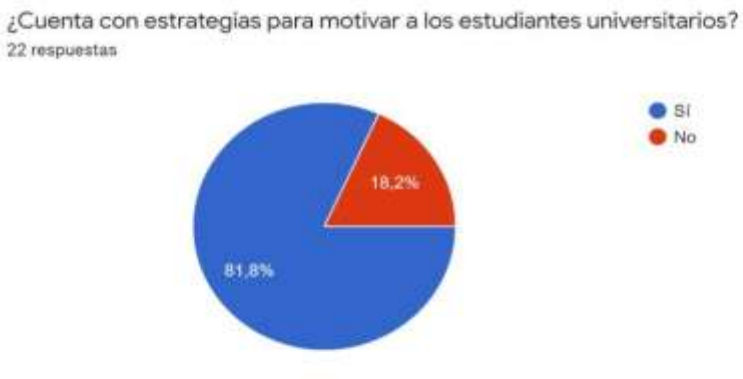
SURVEY GRAPH 9. -Qualitative VARIABLE: Strategies to motivate to university students-.

This graph shows, as a representative data point, that **81.8%** of the tutors **They possess strategies to motivate** university students *at the School of Postgraduate and Business Studies in Madrid.*

It's a high percentage, and yet they still consider staying updated to be the main factor. ***Neuroscience,*** which reaffirms the need to update and improve the academic level current and for this it is necessary to implement programs that help to reinforce and motivate in acquire new knowledge about Emotional Intelligence.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

GRAPH 9. Qualitative variable: Strategies to motivate university students.

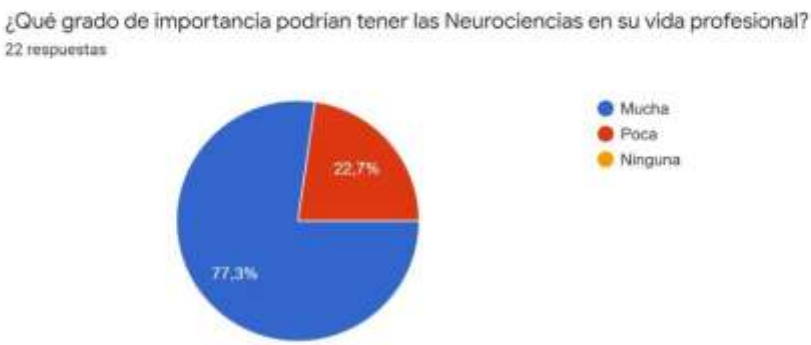


Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

SURVEY GRAPH 10. -Qualitative VARIABLE: Degree of importance of Neuroscience in the profession-.

This graph shows, as a representative data point, that **77.3%** believe that **Neuroscience has a high degree of importance in his professional life.**

GRAPH 10. Qualitative variable: Degree of importance of Neuroscience in the profession.



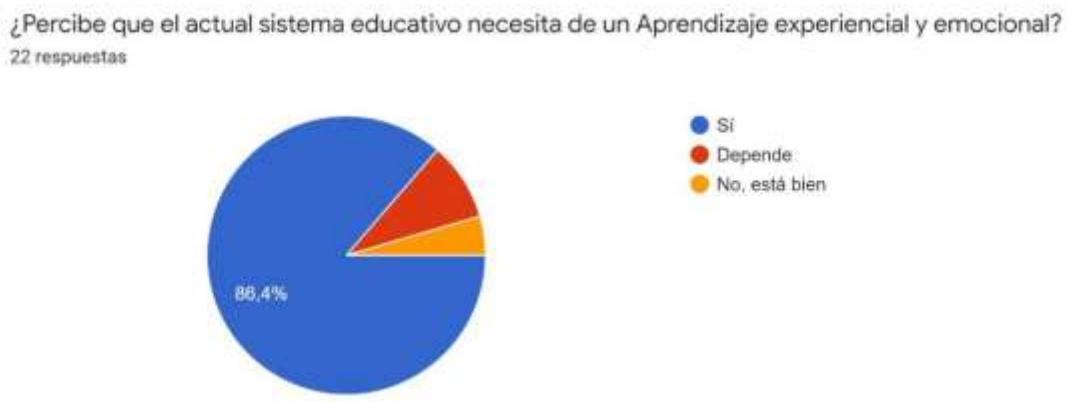
Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

SURVEY GRAPH 11. -Qualitative VARIABLE: Change in the current education system.

This graph shows, as a representative data point, that **86.4%** perceive that the **The current education system needs a change in the experiential learning style. and emotional.**

GRAPH 11. Qualitative variable: Change in the current education system.



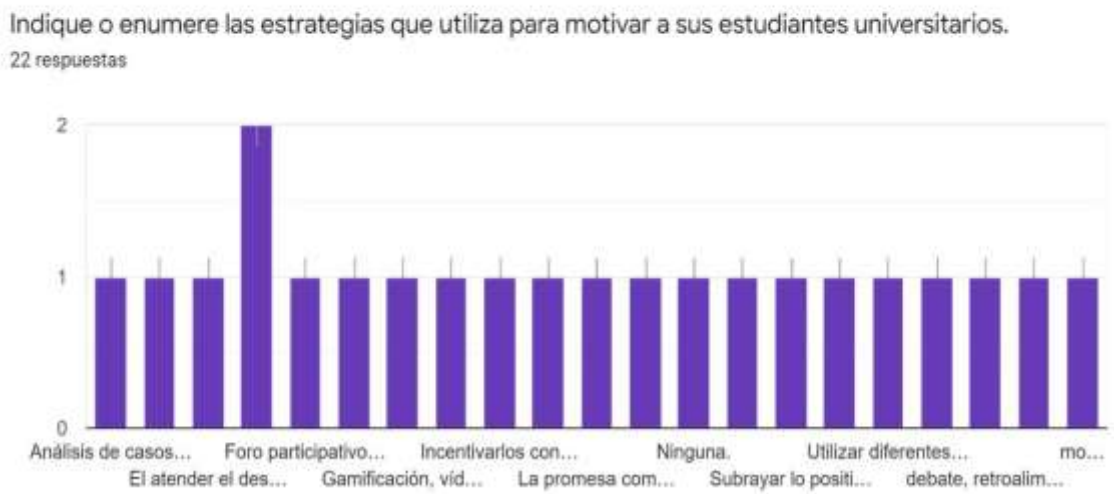
Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

SURVEY GRAPH 11. -Qualitative VARIABLE: Strategies of the Tutors to motivate university students.

This graph shows as a representative data point that **9.1% / 4.5** of the **Teachers/Tutors,** use **the Forum as a strategy to motivate students participatory.**

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

GRAPH 12. Qualitative variable: Strategies of Tutors to motivate university students.



Source and Design: Questionnaire. Data extracted from my research on the proposed topic of study.

As a conclusion from the percentages obtained during the ***Survey conducted on the Professors/ Tutors of the Graduate and Business School of Madrid, Spain,*** it can be deduced that,

63.6 **%** of the tutors are women.

The **highest percentages** of age are distributed between **30/40** and **over 60 years old,** distributed equally in **27.3% each range.**

68.2 **%** have a Master's level academic qualification, compared to **27.3%** with a doctorate.

45.5 **%** have more than 10 years of experience as a university tutor.

86.4 **%** of tutors apply to Humanities areas.

72.7 **%** are considering expanding their knowledge of Neuroscience.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

95.5 **%** indicate that Neuroscience will help them manage their emotions.

95.5 **%** Neuroscience will help you in your teaching tasks.

81.8 **%** have strategies to motivate students.

Given the ***high percentage found in the Questionnaire,*** it is considered necessary

As a suggestion to the contribution of the research study, updating the academic level and

This will update the professional curriculum of each University Tutor/Professor, in relation to

to Neuroscience, with an emphasis on topics related to EI

The **questionnaire** includes a question for each respondent to provide their opinion.

vision on the current education system.

Do you have any suggestions for improving the education system?

20 responses:

- Introduce updated academic plans with topics on personal development,

  financial development.
- No.
- Continuous professional and personal improvement of teachers and students
- Yeah.
- Social interaction and skills learning.
- More emotional intelligence.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

- That the type of intelligence of the students be defined at the beginning of their studies in order to to be able to accompany them appropriately.
- Reinforcement of conceptual study, not necessarily memorization, but reinforcement of the concept, which is losing ground to other skills that, While necessary, they displace knowledge, which is essential at higher levels university students.
- Practical application of the contents.
- Teachers must expand and update their academic knowledge in Neuroscience.
- Update academic knowledge in Neuroscience.
- Considering the wishes and interests of the students
- To promote a more experiential than theoretical learning approach
- Methodologies for studying embedded in age groups.
- RAS.
- Emotional training and leadership in teachers.
- To better identify the tasks carried out in each sector and learn the reality of a job (practice) and not just theory.
- Expand knowledge and update on emotional management.
- Academic update.
- Ongoing updates.
- Virtual meetings with role models.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

SPSS PROGRAM -IBM-

I use the following variables that I evaluate in my project.

ÿ ***Gender*** and ***academic level achieved.***

They are ordinal qualitative variables.

ÿ **Age.**

It is a discrete, nominal quantitative variable.

ÿ **Country** and **City of residence.**

They are ordinal qualitative variables.

Therefore, **the charts** I have inserted below correspond to:

ÿ **VARIABLE FREQUENCIES:**

Age. Gender. Country. City. Area of Expertise. Years of Experience. Level educational.

ÿ **STATISTICS:**

MEAN MEDIAN MODE.

ÿ **FREQUENCY BAR CHART.**

Since the objective of the study will be to analyze the ***"Academic obsolescence in Neuroscience of the Tutors of the Graduate and Business School located in Madrid, Spain.***

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

Due to its impact on ***academic and personal development,*** a ***design*** will be used ***Non-experimental ,*** which will be applied transversally , and considering that ***the topic of The research*** has ***sufficient theoretical support.***

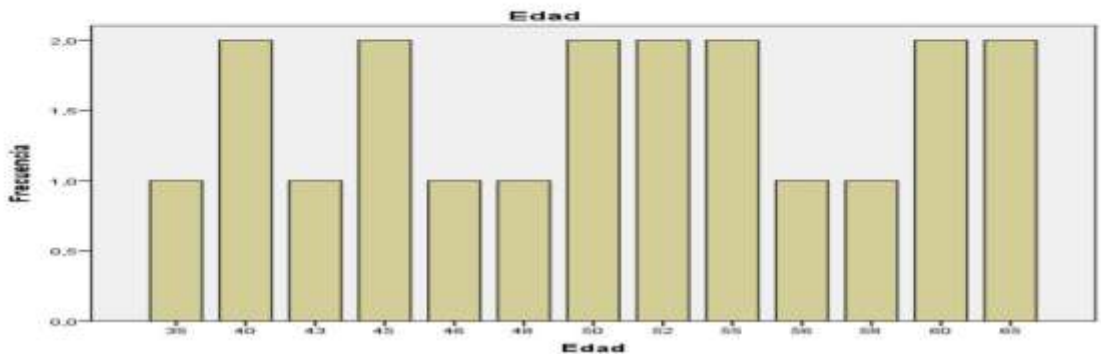
A descriptive investigation was then carried out to find out in detail the phenomenon under study.

GRAPH -SPSS- Variable Age.

Within the population of selected tutors, the average age is evaluated. They are currently providing *tutoring in different Master's programs at the Graduate School and Businesses in Madrid.*

The **age variable** taken was between 30 and over 60 years, with the most prevalent being The following ages of the guardians in general, *including women and men,* are : **40 years. 45 years. 50 years. 52 years. 55 years. 60 years and 65 years.**

GRAPH 13. SPSS Variable Age.



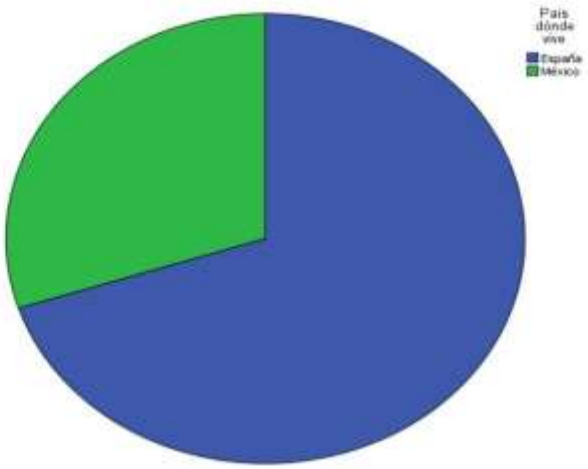
Source and Design: SPSS - IBM. Data extracted from my research on the proposed topic of study.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

GRAPH -SPSS- Country Variable.

The country where each tutor resides is taken as a variable, obtaining the highest percentage **Spain, 85%** compared to **15% Mexico.**

FIGURE 14. -SPSS Country Variable.

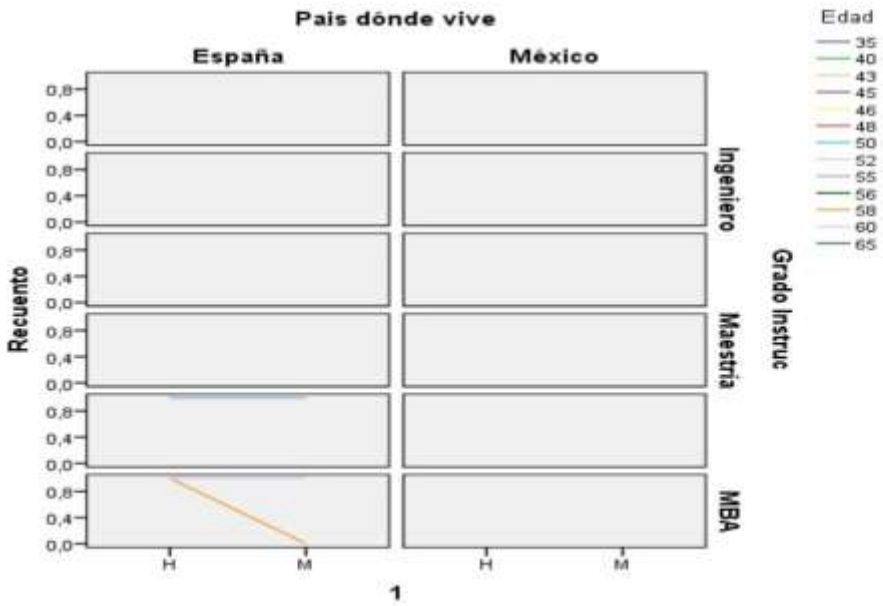


Source and Design: SPSS - IBM. Data extracted from my research on the proposed topic of study.

GRAPHIC -SPSS- Gender Variable and secondary variables.

In this graph , **the main or dependent variable** is : Gender , related to **secondary variables:** *Country of residence, Age, and Grade Instruction achieved,* with a high rate of ***female tutors residing in Spain with an age of 35 to 58 and over 60 years old and with the highest qualification achieved in different Master's programs.***

GRAPH 15. SPSS Gender Variable and secondary variables.



Source and Design: SPSS - IBM. Data extracted from my research on the proposed topic of study.

6.3.3. Table of Variable Relationships.

"Outdated training in Neuroscience influences academic performance from the tutors of the Madrid Graduate and Business School."

The variable relationship chart will allow us to evaluate how **the Age variable,** in relation to the number of tutors surveyed according to the data supplied through the ***specialized SPSS data program.*** The following will be observed: associations between the two numerical variables (age and number of tutors surveyed), yielding an average of **55.00/50.00** in **Chart 16.**

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

SPSS - Numerical variables age.

Correlations between two Numerical Variables.

GRAPH 16. -SPSS Numerical variables age.

Descriptive statistics

	Average	Standard deviation	N
Average Age.	55.00	8,373	22
Tutors surveyed.	50.00	8,255	22

Source and Design: SPSS - IBM. Data extracted from my research on the proposed topic of study.

SPSS - Variable age and number of tutors surveyed.

Correlation of descriptive information.

This table contains **descriptive information,** the arithmetic mean, the standard deviation typical and biased and the number of valid cases, in relation to **the age variable of the tutors** studied in the present analysis.

GRAPH 17. -SPSS. Variable age and number of tutors surveyed.

T-Correlations

		Age	Number of guardians
Age	**Pearson correlation**	1	1,000**
	Sign (bilateral)		,000
	Sum of squares and cross products	1,332,000	1,332,000
	Covariance	70,105	70,105
	N	22	22

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

Number of Tutors	Pearson correlation	1,000**	1
	Sign (bilateral)	,000	
	Sum of squares and cross products	1,332,000	1,332,000
	Covariance	70,105	70,105
	N	22	22

**. The correlation is significant at the 0.01 level (two-tailed).

Source and Design: SPSS - IBM. Data extracted from my research on the proposed topic of study.

Therefore, this table provides information regarding the **Pearson coefficient.**

Each cell contains five values referring to the intersection between each pair of variables.

The critical level will allow us to decide on the ***null hypothesis*** of ***independence.***

linear, that is, on ***the hypothesis*** that ***the correlation coefficient is zero (0) in the population.***

SPSS - Academic level and country of residence.

Contingency table.

The variable under study in the following contingency tables is to correlate ***the Academic level achieved and country of residence.***

The summary obtained is from 100% of the cases validated in the study conducted. according to the data provided.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

GRAPH 18. -SPSS Academic level and country of residence.

Summary of case processing

	Cases					
	Valid		Lost		Total	
	N	Percentage	N	Percentage	N	Percentage
1 * Academic level achieved	22	100.0%	0	0.0%	22	100.0%
Country where you live. * Educational level	22	100.0%	0	0.0%	22	100.0%

1 * Academic Level.

Source and Design: SPSS - IBM. Data extracted from my research on the proposed topic of study.

SPSS - Gender and Academic Level Variables.

This table relates two ***variables: Gender and Academic level achieved.***

yielding a prevalence of **women with Master's degrees** over **men with PhDs or Bachelor's degrees in engineering.**

GRAPH 19. -SPSS Variable Gender and Academic Level.

Contingency table

Count

		Level of Instruction						Total
		Doctorate	Engineer	Bachelor's Degree	Master's Degree	Master's/Other	MBA	
1	H	1	1	0	2	2	1	8
	M	2	0	0	6	4	3	14
Total		3	1	0	8	6	4	22

Source and Design: SPSS - IBM. Data extracted from my research on the proposed topic of study.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

SPSS - Country and academic level variables.

This table relates two ***variables:*** **Country of residence and academic level reached, showing that the highest number of tutors prevails The Madrid Graduate and Business School, in e-Learning format in Spain with a high index in the academic level achieved.**

GRAPH 20. -SPSS Variables Country and academic level.

Contingency table

Count

		Academic level achieved						Total
		PhD, Engineering,	Bachelor's Degree,	Master's Degree,	Master's/other,	MBA		
Country where you live	Spain	1	3	0	2	4	4	14
	Mexico	0	0	0	4	2	0	6
Total		1	3	0	6	6	4	20

Source and Design: SPSS - IBM. Data extracted from my research on the proposed topic of study.

In conclusion, it can be deduced that both the **survey** conducted with the **Program Google Forms,** like the **SPSS program,** yield the same statistical results in Regarding the study variables.

The difference that we want to point out is that, with **the analysis of the Survey ,** may indicate that ***the proposed design*** for ***the research study*** will ***not*** be ***Experimental,*** with a ***descriptive and correlational level*** and a ***qualitative approach.***

CHAPTER 7. CONCLUSIONS.

Based on the review of the literature and documents analyzed, it can be concluded that the ***personal and academic development of the teachers/ tutors of the School of Postgraduate and Business Studies in Madrid*** show a significant influence starting from the sociocultural factors, psychological characteristics and their initial training.

The role that each professional assumes influences their academic and thematic approach.

In addition, psychological characteristics are fundamental in terms of ability cognitive, personality characteristics (Temperament and Character), limiting beliefs/paradigms related to the profession and educational experience early, as it reveals how ***personal and academic development will be.***

Comprehensive health prevention is positively related to freedom. Responsibility and self-determination, constituting the realization of goals important in raising awareness among the population.

Empirical research shows us that when life has no meaning, Existential frustration will arise (the emptiness of existence).

This negative cognitive-emotional-motivational state is intimately related to despair, uncertainty, anxiety and is characterized by directly affect the way the individual perceives their level of satisfaction with life. It manifests as the emptiness of existence, in a state of boredom, lack of control over one's own life and perception of important goals.

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

Psychology has great resources to help prevent illnesses mental, by accompanying individuals in their ***emotional development*** which has an impact indirectly in their physical health, in their perception of ***emotional well-being ,*** and in their sense of ***Quality of Life.***

"The happiness in your life depends on the quality of your thoughts."

Taking into account everything discussed above, it is important and necessary to integrate into the training update processes, the social representations of the ***teacher/ tutor,*** allowing the integration and identification of students' current needs, so that they can modify the current educational programs.

7.1. Contribution.

While it is not possible to completely overhaul the current education system, it is suggested to make limited changes, without affecting current curricular programs and that They must follow ***the laws and the Official State Gazette (BOE) - Spain -*** and for this, it is necessary to focus on the theoretical integration with practical learning, being an autonomous learning and Proactive. Include interdisciplinary teamwork based on reflection and contribution from activities specifically designed to develop emotional management, which It will have an impact on both personal and professional life.

Continuous improvement ***(KaiZen)*** is fundamental and essential in teacher training. for a change in consciousness that allows for expanding knowledge about ***Neuroscience.***

The role of a *Mentor-Coach* is also suggested to help promote the identification with the profession of each teacher/tutor, since reflective learning

This will allow for a reorientation of appropriate teaching practices and will in turn have repercussions for students.

by generating a greater degree of assertiveness and empathy between teacher and student.

7.2. Benefits of Research.

This research work will undoubtedly contribute the benefit of... improvement of teachers' observation and listening skills, as it will develop in them a a receptive attitude where the focus of interest will always be the emotional well-being of the Community of ***professors/ tutors of the Madrid Graduate and Business School,*** with emphasis on optimizing **IE**

Furthermore, the benefit of *"sowing the seed"* can be highlighted. update knowledge and adapt innovatively to the historical moment that is She lives where emotions have taken on a significant role in her personal and professional life, is of crucial importance.

7.3. Scope.

According to the study conducted using the ***Questionnaire*** as an instrument When used with open and closed questions, it follows that,

RESEARCH PROJECT. "Outdated knowledge in Neuroscience influences the personal and academic development of university tutors."

The majority of ***teachers/ tutors* (72.7%),** who teach in the ***Graduate and Business School in Madrid,*** expressed their intention **to expand knowledge about Neuroscience.**

95.5 **%** believe that ***Neuroscience can help them with their tasks pedagogical*** and **81.8%** ***have strategies to motivate students university students.***

Acquiring ***knowledge about the Neuroscience,*** as it will allow ***teachers/ tutors*** to obtain more tools and thus, to expand and better update their knowledge, primarily to provide a more committed ***Experiential and Emotional Learning*** and proactively by and for the university student.

In contrast, another high percentage of ***teachers/ tutors* (27.3%) *do not consider it There is interest in expanding knowledge and training in this field,*** although it is worth noting that **4.5%** of the ***teachers/ tutors surveyed,*** a large minority, believe that ***Neuroscience will not help you in your teaching tasks.***

It is often believed that, as university professors who have a long academic trajectory, do not allow students to make full use of their knowledge, due to a lack of knowledge in **EI** (Emotional Intelligence), or teaching methods appropriate for the **21st century.**

Professors /***Tutors with master's degrees*** are those who, to a lesser degree, **(22.7%)** have updated their academic level, followed by professionals with doctorates;

That is, they have two higher levels of education, and have updated themselves on topics of Neuroscience to a lesser extent than those who specialize or only Bachelor's degree corresponding to **77.3%**

The ***university professors/ tutors of the Graduate and Business School of Madrid*** welcomed ***the usefulness of updating themselves on Neuroscience topics ,*** which confirmed the clear response in support of these issues **(86.4%),** others expressed that Although they will also be beneficial to them **(9.1%),** they are only partially useful for their lives professional.

The teachers who ***did not believe these topics were useful*** represented only the **4.5%** of the total.

However, the teachers who did not answer this question were also They should consider, which is equivalent to **18%,** since the **general population is composed of 40 teachers/tutors and the sample obtained was 22 Professors/Tutors of the Madrid Graduate and Business School.**

The scope of this research study will be significant. according to the parameters obtained, by demonstrating genuine interest in its updating academic on topics related to ***Neuroscience,*** for your personal life and professional.

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7.4. Suggestions and Applications.

As *suggestions and applications* regarding the ***suggested contribution,*** I propose linking to ***Active Methodology.*** Active methodologies , as defined by **López** (2005), are *"An interactive process based on teacher-student, student-student, student-teaching material and student-medium that enhances involvement responsible for the latter and entails the satisfaction and enrichment of teachers and students."* However, *the use and usefulness of* ***active methods*** *is not limited to the field not only in formal education, but also and especially in the field of education non-formal, this methodology being the basis for intervention models such as sociocultural animation and education for leisure and free time,* as it **Ventosa and his team** demonstrate (2016).

This methodology is characterized by the following points:

- It is usually defined in opposition to the passive or receptive methods used traditionally in teaching. And thus, three fundamental features are observed: activity, participation and self-direction, according to **Ventosa** (2012).
- Learning is conceived as a constructive, not receptive, process.
- Learning is self-directed. It aims to promote skills that enable the students judge the difficulty of the problems, detect if they understood a text, knowing when to use alternative strategies to understand the documentation and

to be able to assess their progress in acquiring knowledge, according to what

Brunning (1995) contributes .

ÿ Teaching should take place in the context of real-world problems or

professional practice, presenting situations as close as possible to the context

professional field in which the student will develop in the future.

Although this type of **active methodology** is observed in an innovative way, they have have been present throughout history.

Both authors **(Heinrich Pestalozzi, Johan F. Herbart, Friedrich Fröebel, John Dewey,** etc.), as institutions (the Free Institution of Teaching, the New School, the Escuela Única Republicana, etc.) already used this name.

This pedagogical system aimed to build an education system integral, holistic, harmonious and gradual, having as basic principles, universal laws of nature applied to the pedagogical system.

The **active methodology** aims to generate significant and up-to-date changes to This is a historic moment, as there is an attempt to move away from traditional education. in such a way that the ideas presented by the teacher and the student are modified. "empty box" that needs to be filled or fed with the knowledge imparted by the professor, who is the one who possesses the absolute truth.

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RECOMMENDATIONS.

This research study establishes a foundation as a precedent for to have a thorough understanding of the current problems related to ***outdated information academic*** and the consequences it produces, not only for the ***teachers/ tutors of the Madrid Graduate School of Business,*** but indirectly in the students university students.

As a recommendation to the present study, its contribution is to raise awareness that The current situation can be improved with a multidisciplinary approach, encompassing everything from the from the molecular to the cellular level, from the systemic to the behavioral, from the metacognitive to the cognitive, including neurogenesis, biochemistry and physiology of the nervous system.

This work is the beginning of a path of knowledge based on the theory and applied to practice, relating ***Neuroscience to intelligence emotional.***

"None of your neurons know who you are... Nor do they care about you."

-Eduardo Punset-

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GLOSSARY OF UNKNOWN TERMS.

ÿ **BIOLOGICAL ACTIVATION:** State of activation of the cerebral cortex and of sympathetic nervous system, involving heightened senses and an alert attitude and monitoring, increased heart rate, blood pressure and Muscle tone, and increased glucose and fats in the circulating blood.

ÿ **CEREBRAL AQUEDUCT:** Portion of the ventricular system that connects the third ventricle with the fourth ventricle.

ÿ **CEREBROVASCULAR ACCIDENT (CVA):** Brain damage of various Etiologies derived from a vascular process. These include cerebral ischemia. (thrombosis), transient ischemia, cardiogenic embolism, cerebral hemorrhage and subarachnoid hemorrhage.

ÿ **ADENOHYPOPHYSIS:** Anterior lobe of the pituitary gland that produces corticotropin (ACTH) and many other hormones in response to physical or emotional stress. ACTH stimulates the adrenal cortex and increases its hormone synthesis.

ÿ **DNA:** The material support of heredity. It is made up of two strands Genes are intertwined helical structures of nucleotides (nitrogenous base + sugar). They are made up of DNA segments.

ÿ **BROCA'S APHASIA:** Difficulty articulating words as a result of damage to Broca's area in the left frontal lobe.

ÿ **WERNICKE'S APHASIA:** Difficulty understanding words such as as a consequence of the lesion of Wernicke's language area, located in the lobe temporary.

ÿ **ALZHEIMER'S:** Alzheimer's disease, also known as Alzheimer's disease Alzheimer's, or Alzheimer's-type senile dementia, is a disease neurodegenerative, which manifests as cognitive impairment and disorders behavioral. It is characterized in its typical form by a progressive loss of memory and other mental capacities, as nerve cells Neurons die and different areas of the brain atrophy. The disease usually have an average duration of approximately 10 years after diagnosis, although This can vary in direct proportion to the severity of the disease. time of diagnosis.

ÿ **CEREBRAL AMYGDALA:** It is an almond-shaped structure made up of several nuclei (the basolateral group, the centromedial nucleus, and the cortical nucleus). It is located in the anteromedial portion of the temporal lobe. The amygdala It is part of the limbic system; its main function is processing and storage of emotional reactions, essential for survival of the individual. It is responsible for receiving signals of potential danger, of develop a series of reactions that aid in self-protection, from training and storage of memories associated with emotional events.

ÿ **BRODMANN AREAS:** Brodmann areas or Brodmann maps. Studies cyto-architectural models in which a unit is identified according to the cell type.

ÿ **WERNICKE AREA:** Named after Carl Wernicke, who described it first in 1876. It is also called the General Interpretive Area, Area Cognitive, Knowledge Area, and Tertiary Association Area. Its function It is related to word comprehension and speech production significant.

ÿ **CEREBRAL CORTEX LAYERS:**

- ÿ **LAYER 1:** Few cells, mainly axons, dendrites and synapses.
- ÿ **LAYERS 2 AND 3:** Pyramidal neurons that project to other regions cortical and receive projections from them.
- ÿ **LAYER 4:** Stellate cells that receive most of the afferent signals thalamic and project locally towards other laminae.
- ÿ **LAYERS 5 AND 6:** Pyramidal neurons that project to regions subcortical areas such as the thalamus, brainstem, spinal cord, and towards other cortical areas.

ÿ **CEREBELLUM:** Located in the posterior portion of the skull, in the so-called In the posterior fossa, there is a second "little brain" (literal translation of "cerebellum" in Latin). This has the form of two enormous prominences called cerebellar hemispheres and a medial zone shaped like an elongated worm: of Hence its name, vermis (which means worm in Latin). Like the brain, it has a

cortex formed by gray matter, subcortical white matter and gray nuclei deep areas called cerebellar nuclei.

The cerebellum accounts for 10% of the brain volume and contains a huge number of neurons, corresponding to half of those found in all the central nervous system.

ÿ **CEREBRAL CORTEX:** Layer of neurons that covers the outer surface of the brain. Its total surface area in humans is 2,200 cm2 and its thickness varies between 1.3 and 4.5 mm, with a volume of 600 cm3. It typically has 6 layers that From surface to depth, the following are the differences:

- ÿ Molecular layer.
- ÿ Outer granular layer.
- ÿ Outer pyramidal layer.
- ÿ Internal granular layer.
- ÿ Inner pyramidal layer.
- ÿ Multiform layer.

This layer, which appears in mammals, is called the neocortex. The oldest Evolutionarily, it is the allocortex, which has only a 3-layered structure and is It is found, for example, in the hippocampus.

ÿ **OUTDATED:** According to the *Royal Spanish Academy,* it refers to the professional: Who is not aware of the latest knowledge or advances in the subject matter or in its area of expertise. Another meaning of **outdated** in the

dictionary says of a person: Who is not aware of the latest events. **Outdated** is also said of a thing: That which is no longer current.

ÿ **EDUCATION:** Training aimed at developing intellectual and moral capacity and affective of people according to the culture and norms of coexistence of the society to which they belong.

ÿ **NEUROEDUCATION:** A discipline that promotes the integration of sciences of education and neurology where educators and neuroscientists develop disciplines such as psychology, neuroscience, education, and cognitive science.

ÿ **PEDAGOGY:** It is a science that studies education and is responsible for investigating and offer intervention options in educational methods to benefit the Society. **Pedagogy** is a discipline that goes hand in hand with many others. social sciences.

ÿ **PEDAGOGICAL PRINCIPLES:** These are fundamental conditions for implementation in the implementation of the curriculum. It also considers the transformation of practice teacher, the achievement of learning and the improvement of educational quality.

ÿ **NERVOUS SYSTEM:** It is a complex network of nerves and the cells that carry them messages are sent from the brain and spinal cord to the various parts of the body human.

ÿ **AUTONOMIC NERVOUS SYSTEM:** It is the part of the nervous system that It controls involuntary actions (muscles, glands, and blood vessels).

CENTRAL NERVOUS SYSTEM: Corresponds to the brain and spinal cord spinal cord of vertebrate animals.

ÿ **WHITE MATTER:** Nervous tissues known as white matter, they are basically defined as a set of axons (neuronal extensions) that originate in the cerebral neocortex, in the nuclei or centers of the telencephalon, in the reticular formation, and also in the basal nuclei. The white matter is made up of axons

ÿ **GRAY MATTER:** Gray matter corresponds to the part of the central nervous system where the somas or body are grouped neurons, dendrites, axon terminals, glial cells, and abundant capillaries that feed the different types of nerve cells to which this substance Its darker color, gray, is due to this. This substance can take on different forms. conformations:

- ÿ **Cortex:** superficial layer of gray matter (cerebral cortex, cortex cerebellar).
- ÿ **Nuclei:** correspond to neuronal groupings with a function determined, whether motor or sensory, within the central nervous system.
- ÿ **Spinal ganglia:** neuronal clusters, but which are attached to the peripheral nervous system.
- ÿ **Neurovegetative ganglia:** belong to the sympathetic and parasympathetic.

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ÿ **CURRICULAR WORK:** *"Decision-making process involving selection content and the development of pedagogies that are relevant to learners specific and which basically includes selection, sequencing, organization, and "Evaluation of knowledge, resources and activities"* **Clement and Lovat.** (2012:536)

ÿ **BRAINSTEM**

or BRAINSTEM: The brainstem or brain trunk is composed of three major structures: the midbrain, the medulla oblongata, and the boss.

However, this classification only corresponds to the most superficial aspects, since It has other smaller, but no less important, structures such as: the olive; the anterior root; the accessory nerve; the pyramidal decussation; the vagus nerve; the cerebellar follicles; the glossopharyngeal nerve; the intermediate nerve; the nerve hypoglossal; the choroid plexus; the abducens nerve; the vestibulocochlear nerve; the root sensory and motor branches of the trigeminal nerve; the cerebellar peduncle; the body lateral geniculate nucleus; oculomotor nerves; mammillary body; olfactory tract; sulci basilar; optic chiasm; anterior perforated substance; trochlear nerve and substance white.

"A good educator is one who gradually becomes unnecessary."

Thomas Carruthers.

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