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INCORPORATING NEUROSCIENCE INTO LANGUAGE TEACHING PROCESS

ABSTRACT: The purpose of this research is to make a connection between neuroscience and foreign language instruction and acquisition, so it is devoted to considering summary of the language-related parts of the brain, theories of neuroplasticity, and various explanations of the crucial and sensitive phase ideas. The contributions neuroscience has made to the field of language teaching and learning will next be analysed, along with potential modifications and tools for use in foreign language classrooms. It was determined that neuroscience can be able to assist teachers in enhancing their methods and assisting students in learning.

Keywords: neuroscience, neuroeducation, foreign language, teaching methodologies.

INTRODUCTION. It is essential to comprehend how the brain works in order to comprehend the process of acquiring a language. Language is not localized in one area of the human body, but rather involves a variety of structures spread throughout the encephalon, such as the articulatory system, the dorsal and ventral parts of the brain, or the right and left hemispheres. This is according to neuroscience. When considering the process of teaching a foreign language, the complexity of the language system mirrors the goal of developing the structures associated with language acquisition in each individual, with a focus on the utility of language. Neuroscience research is a necessary topic of discussion when understanding how the brain functions. We can have a different understanding of what it means to teach and, more specifically, learn a second language by using neuroscience studies. This research aims to analyze the potential of neuroscience as a tool to enhance pedagogical practice in foreign language classrooms, with the goal of enhancing teachers' approaches and facilitating students' learning. It is also

hoped to investigate what neuroscience has to say about the process of acquiring a language through this methodology. Through the application of neuroscience`s contributions, teachers can enhance their pedagogy and classroom management strategies, emphasizing the effectiveness and success of their teaching.

Over 100 billion neurons make up the structure of the human brain, claim Stiles and Jernigan (2010). These neurons are different in size, structure, and function from one another. They are brain cells that process information. Neurons link with one another in order to form and process data. Electrical signals connect neurons and create points of contact, transferring information and establishing networks. A “neuro-functional scheme” is a term used to describe these networks, according to Sinani (2012). Genetic factors, such our propensity to cry as babies, may have an impact on the activation of these neurons. Genetic activation refers to our naturally occurring behaviors, which are the aspects of human function that are not acquired.

MATERIALS AND METHODS. During this research, qualitative and secondary data analysis were used to investigate the efficiency of implementing neuroscience in language teaching. According to previous researches, it is evident that further examples of neural-function schemes will rely on the environment's and/or the source`s input. Genetic activation, which comes from our innate need and desire to communicate, and environmental activation, which arises from our need to enhance language in order to be realized. Friederici (2011) interprets this language network as follows: each domain is in charge of a single process, and these domains are connected to each other in order to convey a language at the conclusion of the processes. The main language processing areas are Wernicke`s and Broca`s regions, which have specific segments dedicated to language functions. Research has demonstrated that comprehension of language activates the posterior temporal lobe. The left posterior superior temporal gyrus (STG), according to Friederici's (2011) analysis, provides syntactic information by comparing statements to word lists and contrasting syntactically proper and

semantically violating sentences. Finally, Friederici (2011) concluded that when discussing word order and the relationship between a verb and its arguments, the posterior temporal lobe is more active in the syntactic process. Moreover, it was discovered that the genesis of language may possibly have something to do with brain activation. Friederici (2011) found that all Indo-European languages had a subject-verb sentence structure when analyzing them. “Canonical” is the term Friederici chose to describe this linguistic structure. Using both canonical and noncanonical sentences, the study's methodology analyzed the brain activations associated with each sentence structure. The Broca's region was particularly active during the interpretation of these sentences in both situations. Friederici (2011) came to the conclusion that Broca's region is crucial for syntactic processing as a result, particularly in syntactically complicated sentences. The left dorsal posterior in addition to Broca's area.

RESULTS. Syndyotactic complexity additionally activates Broca`s area, the left dorsal posterior IFG, the Inferior Frontal Sulcus (IFS), and the mid-posterior Superior Temporal Sulcus (Friederici, 2011). However, there comes a time when syntactic and semantic face together in order to accomplish interpretation. Research in neuroscience has demonstrated that this integration happens specifically, though not exclusively, on the Superior Temporal Gyrus (STG). According to Friederici (2011), the degree of integration determines the domain of semantic and syntactic integration. According to the author, the integration of pertinent language information first takes place on the left IFG (Inferior Frontal Gyrus), and then the ultimate integration takes place on the left posterior STG. The syntactic, semantic, and acoustic-phonological processes are additional crucial ones. In a nutshell, the study of speech sounds and interpretation of meaning in spoken language constitute the acoustic-phonological process. Meaning is dealt with through a semantic process, but not just in spoken language, seeking to fulfil this section's second objective of explaining the connections between different parts of the brain and architecture and clarifying how language functions. Dick and

Trembley (2012) used the network. The scientists found additional fiber channels (fiber pathways) for language processing in addition to the dorsal and ventral systems. Dick and Trembley (2012) found distinct connections in the ventral pathway, but they also confirmed a relationship between the dorsal pathway and the superior longitudinal fasciculus/arcuate fasciculus. According to Dick and Tremblay (2012), these relationships exist between the inferior fronto-occipital fasciculus, the inferior longitudinal fasciculus, and the uncinated fasciculus. The links between language the delivery and expression are established in the dorsal route by the superior longitudinal fasciculus/arcuate fasciculus.

DISCUSSION. Thus far, neuroscience has focused a great deal of emphasis on the formation and functioning of the brain. Numerous findings in the field of language have been made that may advance our knowledge of how language functions in the human brain. This study set out to determine how neuroscience might support language teaching and learning approaches, thereby assisting educators in their work and enhancing student outcomes through increased efficacy and quality of education. Furthermore, the literature linking neuroscience to education is very new, and some writers have categorized this field of study under the title “neuroeducation”. After analyzing the available information, it was found that research on brain function and the regions of the brain that are activated in response to different language traits is what forms the fundamental link between neuroscience and education. The writers who focused their work on neuroeducation researched what attitudes activate a particular area and how it may be stimulated in a classroom by using knowledge of brain areas active for language. Notwithstanding the benefits of neuroeducation, more research, testing, and debate are required before it can be used to precisely create or enhance L1 and L2 working methods. Finding innovative ways to incorporate neuroscience into language classrooms and encouraging more instructors to study the field's literature are critical to the field`s future. However, it is crucial to note that neuroscience has a number of distinct shortcomings in the field of education.

According to Lief (2014), there is a lack of comprehensive data regarding the true mechanisms by which neuroscience affects education. Furthermore, there are many misconceptions regarding the findings made in neuroscience and a widespread perception that these discoveries have the potential to significantly alter educational practices. The author claims that there is a great deal of discoveries yet to be made and that educators need to be conscious of the gap that exists between theory and practice.

CONCLUSION. According to Lief (2014), teachers are free to incorporate neuroscience into their lesson plans. But they should exercise caution and assess whether this is changing or improving the learning process by looking at how students respond, how well they use L2, and how easily they use it. Lastly, we recognize that even though applied neuroscience is still in its early stages, it is critical to incorporate it into second language or foreign language teacher preparation programs starting at the undergraduate level to empower teachers to use it in the classroom. Understanding neuroscience is crucial to improving our ability to support language learning and increase the efficacy of our teaching methods by better comprehending how students` brain's function.

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