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Neuropsychological and Neurolinguistic Foundations of Speech Activation in the Educational Process

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Abstract: *The main purpose of the study is to analyze the neuropsychological and neurolinguistic foundations of speech activation in the educational process. Human speech activity is closely connected with all spheres of human consciousness. The history of the existence of mankind has proved that it is speech that is an important factor in the mental development of the individual and the improvement of social relations. Under the influence of speech, consciousness, mental operations, volitional and emotional spheres develop, and the intellectual capabilities of a person are enriched. Broadcasting as a psychological phenomenon is one of the most difficult in the life of each of us. Speech activity has its own physiological mechanisms, which are determined not only at the functional, but also at the morphological level. Based on the results of the study, key aspects of the neuropsychological and neurolinguistic foundations of speech activation in the educational process were considered.*

Keywords: *Neuropsychological; Neurolinguistic; Speech; Educational Process.*

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1. Introduction

The quality of the modern upbringing and educational process is closely related to the fundamental improvements in technologies and methods of teaching and upbringing, which in turn depends on the use of a complex of technical means by teachers. The widespread use of technical teaching aids is one of the patterns that characterize the modern educational process in the era of general informatization of society that we are experiencing, which poses new problems for the system of education and upbringing of the younger generation (De Smedt et al., 2018).

The development of children's speech is one of the problems of modern pedagogy. Mastering the native language, activating speech is one of the most important acquisitions of the child. The ultimate goal for the development of speech in a preschool institution, one of the topical issues remains the problem of speech activation (Feng et al., 2017).

Broadcasting occurs as a result of coordination of the functioning of the brain and other parts of the nervous system. Various analyzers take part in the implementation of the speech function: auditory, kinesthetic, motor and visual. In order to pronounce a sound, the child needs to carry out a complex set of articulatory movements. At the same time, breathing, phonation and articulation should be interconnected in their work, and speech movements should be in accordance with the corresponding auditory sensations (Gilman, 2007).

Numerical studies testify to the exceptional role of movements, the motor-kinesthetic analyzer in the development of speech and thinking. Their results proved that the first dominant innate form of activity is motor activity. In addition, if the child's speech development occurs in a timely manner and without complications, then he masters the speech system simultaneously with the development of general motor skills and differentiated hand movements, and violations in the assimilation of speech in children are closely related to the underdevelopment of their motor system as a whole. All this actualizes the study of the topic.

2. Methodology

To characterize the features of the neuropsychological and neurolinguistic foundations of speech activation in the educational process, the following methods were used: induction and deduction, comparison and systematization - to characterize the modern understanding of the essence of the neuropsychological and neurolinguistic foundations of speech activation

in the educational process, synthesis and analysis - trends in the development of neuropsychological neurons of speech activation in educational process; morphological analysis - to clarify the significance of neuropsychological and neurolinguistic foundations of speech activation in the educational process; abstract-logical - for theoretical generalizations and conclusions of the study. Using the modeling method, a model is formed.

3. Research Results and Discussions

The problem of the word is one of the most controversial linguistic problems, since it is the main unit of the language. The word is the main building material of statements through which communication between people is realized. It is the basic unit for naming the facts of reality, as well as the perceptions, thoughts, feelings of a person caused by these facts. The word as a linguistic unit requires a definition corresponding to its nature, which would delimit it from the nearest linguistic units (morphemes and sentences), the neighboring word. The word is a representative of all components of the language - phonetics (consists of the sounds of the language), vocabulary (designates, encodes any phenomenon of reality, carries a semantic load), grammar (in a certain grammatical form). So, the word is the central unit that permeates the entire language system.

Mental and physical development are interrelated processes, which makes it expedient to use such approaches that ensure the integration of communicative and motor activities.

A prerequisite for the integration of motor and speech activities is the commonality of their control mechanisms. In addition, preschool children need a constant change in activities. Integrated speech-motor joint activity is based on the game method, since the main activity of a preschool child is a game (Federighi, 1999). The game plot combines a variety of motor tasks and exercises of a didactic developmental nature, special exercises, tasks for the development of speech; exercises for coordination of speech with movement; outdoor games, as well as other exercises aimed at solving the problems of the child's physical development. Special exercises are often used, which are elements of different types of gymnastics (articulation, finger, breathing).

The introduction of such technologies is due to the search for ways to integrate speech and motor activity. Such technologies include different types of gymnastics (finger, breathing, articulation, rhythmic, fitball gymnastics, plot-role-playing logorhythmic gymnastics), step aerobics, exercises in a dry pool. Finger gymnastics contributes to the development of fine motor skills, which, in turn, is associated with the development of the

left temporal and left frontal areas of the brain. Finger games help to form communicative relationships at the level of touch, emotional experience, contact. The development of fine motor skills contributes to the intensive development of speech. The formation of the child's verbal speech begins when the movements of the fingers become more accurate (Gardner, 1983; Grenčíková et al., 2021).

The key factors influencing the perception of the brain, linguistic innovations are presented in Figure 1.

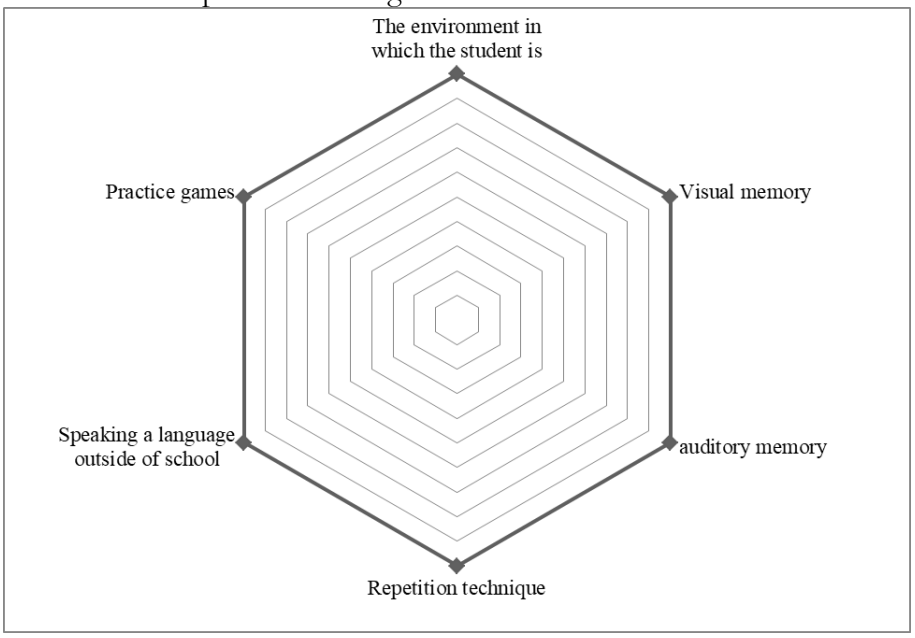

Figure 1. The key factors influencing the perception of the brain, linguistic innovations

Source: Developed by authors

For the correct pronunciation of sounds, an accurate coordinated work of the articulatory apparatus (lips, tongue, lower jaw) is necessary. Exercises based on the movements of the tongue and jaw stimulate the work of the basal ganglion of the limbic system, including a specialized area - the "black" substance that combines the basal ganglion with the frontal area of the brain that controls the child's thinking, speech and behavior. These are the exercises of articulation gymnastics. Articulatory gymnastics contributes to the development of speech sounds - phonemes - to correct the shortcomings of sound broadcasting; includes exercises to develop the mobility of the articulatory apparatus (Hanaba, et al., 2019; Ivan et al., 2021; Johnson et al., 2006).

The procedure of voice formation occurs with the participation of the respiratory organs (throat, bronchi, intercostal muscles, etc.). Any types of motor activity affect the development of the respiratory system, but a purposeful influence on its condition is carried out by specialized physical exercises - breathing exercises (Kryshtanovych et al., 2020).

In the process of organizing the motor activity of children, rhythmic gymnastics (a system of movements closely related to musical accompaniment) has received wide introduction. In the process of performing movements to music, the processes of excitation and inhibition in the central nervous system are regulated, the development of memory and attention is stimulated, and the emotional state of the child is normalized (Rizzolatti & Arbib, 1998). When performing rhythmic gymnastics complexes, children learn to perform exercises at a specific pace, coordinate movement and speech (singing familiar melodies to the beat). Gymnastics using fitballs is one of the varieties of fitness gymnastics. Currently, balls of different elasticity, size, weight are widely used in physical education, sports and medicine (Olivan et al., 2021). The ball has certain properties that can solve problems of a recreational and didactic nature. These properties are the size, color, elasticity and even the smell of the ball. Due to the vibration during exercise and the shock-absorbing function of the ball, regenerative processes are activated, blood circulation and microdynamics in the intervertebral discs are improved, which contributes to unloading the spine and correcting its disorders. Vibration, along with movement, enhances impulses with proprioreceptors, thereby stimulating the motor area of the cerebral cortex, which indirectly positively affects the formation of a child's communication and speech skills (Marinescu, 2017).

Aerobics is a system of physical exercises, the energy supply of which is carried out in the presence of oxygen. For step aerobics, exercises of a cyclic nature (mainly walking) are selected, performed on a step platform (different options for climbing a platform, jumping over it, etc.). These exercises help to activate the processes of blood circulation and respiration, metabolic processes. Exercises in the "dry" pool (filling-balls, paralon, etc.) contribute to the development of coordination of movements and a sense of balance, as well as the development of all sensory systems. Classes in the "dry" pool contribute to the deprivation of muscle and emotional tension, which is very important for the development of speech and motor skills of the child (Rizzolatti & Arbib, 1998; Sylkin et al., 2021).

The model of speech activation through neurolinguistic foundations in the educational process is shown in Figure 2.

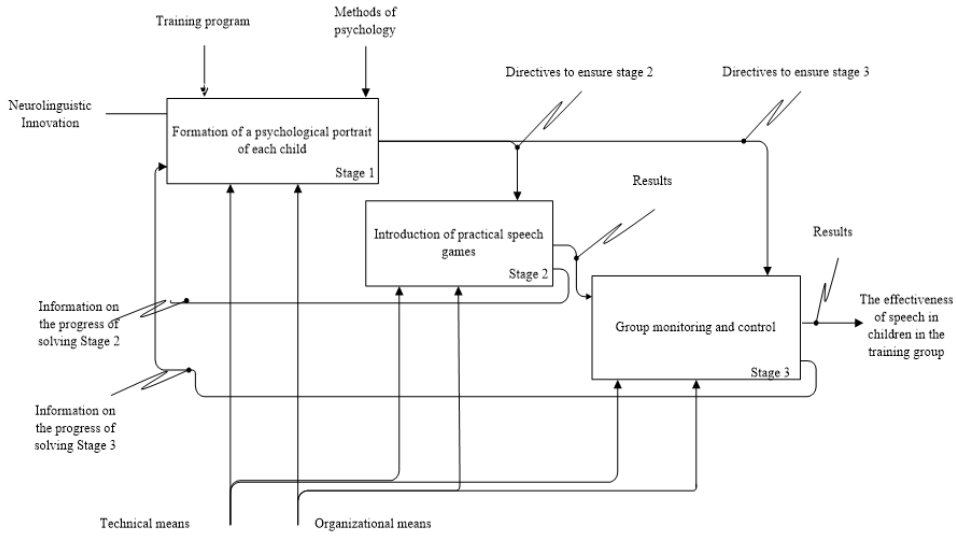

Figure 2. The model of speech activation through neurolinguistic foundations in the educational process
Source: Developed by authors

A special place in solving the problem of integration of the motor and speech activity of the child is occupied by plot-role-playing logorhythmic gymnastics. Its components - movement, plot, music, game and word, combined into a single complex, create unique conditions for the development of speech. Mastering motor skills and abilities contributes to the development of general coordination and fine voluntary motor skills (Natalia et al, 2020; Oreshkina et al., 2021).

Musical accompaniment affects the development of expressiveness, rhythm of movements, promotes the development of motor, speech, auditory, visual types of memory. This, in turn, affects the intonation of speech. The text of songs, fairy tales allow you to develop the function of listening and memorizing expressive speech. The whole set of exercises for the development of speech can be divided into two components: the first is aimed at improving pronunciation, which includes the pronunciation of sounds, the pronunciation of recitatives and singing songs; the second is aimed at developing phonemic perception. It includes didactic tasks related to the selection of sounds, listening to the correct speech. Tasks for the development of speech, performed in coordination with movement and music, allow you to combine influence on various analyzers that are systemically responsible for the formation of communicative speech and motor skills (Smith et al., 2006).

The main work of stimulating speech activity is carried out in speech therapy classes in the form of a game. As practice shows, it is advisable for the teacher to work in the following sequence (Shadiev et al., 2017; Ivanko et al., 2021):

1. Imitation of vowel sounds.
2. Adding a consonant sound to a vowel.
3. Pronunciation of two-syllable words with an open syllable (coffee, kiwi).
4. Pronunciation of three-syllable words with an open syllable (milk, dog).
5. Pronunciation of words with a closed syllable.
6. Pronunciation of phrases with a word relating to the desires of the child (I want, I will, eat).

It should be remembered that not all children are suitable for the same methods and techniques of speech stimulation, each child is unique and it is necessary to find an individual approach to him.

4. Conclusions

Providing in-depth knowledge of future professionals in the tourism industry is inextricably linked with the study of foreign languages. Today we are talking not only about reading literature in the specialty, but also about deep knowledge of the history, culture, traditions and customs of other countries, about the ability to freely communicate and conduct discussions in a foreign language. The modern period of development of society, the level of its social and spiritual life requires a qualitatively new level of education that meets international standards. In turn, the training of highly qualified specialists is inextricably linked with the activation of the learning process in the classroom in a foreign language. So, teachers of higher educational institutions are faced with the task of finding new, non-standard and more effective teaching aids.

The purpose of education is to develop the student's mental abilities in such a way that he can reveal the full potential of his body, mind, spirit, and use his personal qualities. No system of education can provide a solution to these problems without the need to do this realized by the student himself, without his psychological readiness for additional efforts, without purposefulness.

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