



FROM PEDAGOGICAL TECHNOLOGIES BASED ON NEUROPEDAGOGY IN THE EDUCATIONAL PROCESS USE

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Article history:	Abstract:
Received: 11 th March 2022 Accepted: 11 th April 2022 Published: 28 th May 2022	This article describes the methods of using pedagogical technologies based on neuropedagogy in the educational process .
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One of the important tasks facing the system of continuing education is to further the formation of human qualities in young people, such as the pursuit of knowledge , spiritual and moral purification, faith, honesty, piety, honor , kindness, and so on. is to ensure that The information provided in the learning process should take into account their neuropedagogical characteristics in order for students to understand and comprehend. This ensures that learners develop synchronization of the cerebral hemispheres - increasing the efficiency of mental activity in them. This will require the development and introduction of new teaching technologies based on neuropedagogy, based on the following important facts. Every child has a different process of learning, understanding the environment and thinking. The specificity of each child's thinking is the volume and speed of reception of information by the hemispheres of the human brain , the superiority of this or that memory system and the course of the thinking process . In planning and organizing the educational process in preschool and primary education, each individual must take into account the specifics of the activity of the cerebral hemispheres. in order to take into account their specificity in the cerebral hemispheres. For the creation and introduction of new pedagogical technologies based on neuropedagogy in the educational process, it is important that teachers follow the following basic principles.

1. A person can compare the brain to a " parallel processor". The brain can perform several functions at the same time. The teacher has the opportunity to engage students in cognitive processes that are different in meaning and content, to use different forms and methods of teaching

2. Cognition and learning are natural mechanisms of brain development.

finds that it can rely on existing knowledge and data, which must be constantly activated in the learning process, will a new situation , a phenomenon of understanding and comprehending the information, emerge. Emotions are a factor in the efficient functioning of the brain. Learning materials are mastered more fully and deeply in a person's good mood. both analyze and summarize the information it receives at the same time . Analysis and generalization are important processes of human thinking in the educational process. The joint formation of ulr requires the use of special forms and methods of education. If the peripheral sensory properties of the brain are used correctly as a constructive factor in the organization of the educational process, the efficiency of the student's acquisition of knowledge will increase. In the human brain, the processes of consciousness and subconsciousness occur at the same time , and in the process of learning, the person finally receives a great deal of information. Because in the process of teaching the child is influenced by internal factors in addition to the information provided by the teacher. The development of the brain is accelerated in free creative activity and slowed down in the processes of external pressure and coercion. In some cases, the teacher's excessive demands on discipline hinder the development of creative activity in students. The human brain is unique. The cortical part of the cerebral hemispheres is the physiological basis of human higher nervous activity, the material basis of our mental activity. The ability of a person to think, reason, master, remember, behave, culture, acquire knowledge, learn a trade, perform complex movements is a function of the cerebral cortex. The anterior forehead of the cerebral hemispheres is called the prontal area and is responsible for movement, targeting, speech, and control. The upper part of the cerebral hemispheres is called the parietal part and is responsible for sensory control.

The cervical part of the cerebral hemispheres is called the occipital part and receives information by sight. The lower part of the cerebral hemispheres is called the temporal area, which is responsible for the reception of sound and related processes, the activity of the auditory organs, maintaining balance. To understand the characteristics of a particular person, it is necessary to know why the right hemisphere of the brain is responsible and why the left is responsible. Man has sensory organs connected to the outside world:

- hearing;

- to see;
- sense of smell;
- it receives information through taste and sensory perceptions.

All this is done by the brain. In addition, with its help, the following is done:

- action planning;
- decision making;
- coordination of actions;
- recognition of emotions, their division into positive and negative;
- memory and attention development;
- thinking (high function).

The left hemisphere is involved in speech, writing, numbering, math, and logic, so it is called the verbal hemisphere. On the other hand, it is responsible for developing the conversion of the data set into words, gestures, and thoughts. More specifically, the language pronounced in the left hemisphere specializes in controlling the motor of the articulated background apparatus, logical information management, balanced thinking, sequential information processing, and mathematical data manipulation. Emotional processes and the emergence of emotions are activities that take place equally in both cerebral hemispheres because they are produced by the limbic system of the brain. The right hemisphere of the brain is responsible for processing non-verbal information given in the form of pictures, symbols, diagrams. The hemispheres of the brain are not separate functioning structures. There is a space between them with the corpus callosum. This helps both hemispheres to work in a coordinated manner. For the brain to function properly, it needs enough nutrients through the diet. If children do not follow a healthy diet and do not receive the necessary nutrients, it will affect their mental and physical activity. Products that nourish the brain include: Nuts. They even look like brains. Eating five nuts a day improves brain function and provides lecithin, which activates memory.

Fish. It is rich in iodine, and its meat contains omega-3 fatty acids that provide the rapid energy flow needed to deliver impulses to brain cells. They also regulate the amount of cholesterol in the blood and improve vascular function.

Pumpkin seeds. Pumpkin seeds improve memory and stimulate the brain to think faster. It's all because of the zinc in it.

Spinach. The lutein in spinach protects brain cells from premature aging . Thus , the basic principle of neuropedagogy is that each person's brain is unique, the volume of information reception and processing speed varies with the predominance of this or that memory system and the course of thought processes. Therefore, each student's process of learning, understanding and thinking about the environment is different. The main task of teachers is to preserve and develop this uniqueness in each student . The teacher creates conditions for students' independent mental activity and fully supports their initiatives. Students, in turn, remain full participants in the learning process and are responsible for the learning process and outcomes together with the teacher. The teacher uses the terms classify, justify, check, summarize, analyze, predict, evaluate, model, and so on in defining lesson objectives. Such setting of learning goals and learning problems and objectives forms the motivation of students to think deeply about the course material, to engage them in meaningful discussions, to express their views, opinions and assumptions. Biology lessons are also one of the new teaching technologies based on neuropedagogy methods of use .

"SWOT-ANALYSIS "METHOD

The purpose of the method is to analyze existing theoretical knowledge and practical experience, to find solutions to problems by comparison, to consolidate, repeat, evaluate knowledge, to form independent, critical thinking, non-standard thinking. For example, in the 9th grade biology curriculum, students are encouraged to complete the following chart as they progress through the topic of "Cell-Free Forms of Life".

S	Strength	Virus
W	Weakness	
O	Opportunity	
T	Therats	

Student Responses

S	Strength	The virus survives only inside the cell and multiplies rapidly. Interacts with cell protein. Disables the immune system
W	Weakness	The virus is inactive and cannot live outside the cell
O	Opportunity	Viruses reproduce rapidly. They turn the proteins in their own direction

T	Therap	Drugs, vaccines, and changes in ambient temperature prevent the virus from multiplying.
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«FSMU» METHOD

Purpose of the method: This method serves to develop the skills of independent creative thinking, assimilation of information, summarizing, as well as drawing individual conclusions from the general ideas of the participants, comparing and contrasting. It is recommended to use this method to reinforce the topic, to ask about the topic, to give homework and to analyze the results of practical training.

Participants' relationships are presented individually or in groups. The analysis provides the basis for participants to acquire professional and theoretical knowledge more quickly and successfully on the basis of practical exercises and existing experiences. For example, in the 9th grade biology curriculum, students are encouraged to work on the following table during the "Plastic Exchange" course.

F	Feedback	Express your opinion
S	Reason	Give a reason for your statement
M	For example	Give an example to prove your point
U	Generalization	Summarize your opinion

Students work on this chart as follows.

F	Feedback	Plastic metabolism is an important condition for the growth and development of the organism.
S	Reason	As a result of plastic exchange processes, molecules of organic compounds (proteins, nucleic acids, lipids, carbohydrates) are synthesized.
M	For example	As a result of plastic exchange processes, biomolecules, enzymes (proteins) that accelerate biochemical processes in the cell, polysaccharides from monosaccharides, fatty acids and fat molecules from glycerin are synthesized to renew the structure of all obsolete parts of the cell.
U	Generalization	Plastic exchange regenerates old parts of the cell, synthesizes organic molecules, and promotes cell growth and development.

Students' brain hemispheres are also actively involved in problem solving.

Problem solving.

If a particular protein contains 170 amino acids, determine the length of the DNA molecule involved in the formation of that protein.

Solution:

DNA i-RNA encodes 1 amino acid 3 nucleotides

$$170 \times 3 = 510 \text{ nucleotides}$$

$$510 \times 0.34 = 173.4 \text{ nm}$$

Answer: The length of a DNA molecule is 173.4 nm

A project of a creative nature

1. A total of 330 g of protein, fat and carbohydrates in a day's lunch. If the energy released from a protein is 328 kcal and the energy difference from fat and protein is 583 kcal, calculate the amount of carbohydrate (g) in the food.

Solution:

$$1) 328: 4.1 = 80 \text{ g protein}$$

$$2) 330 - 80 = 250 \text{ g of fat and carbohydrate}$$

$$3) x + y = 250$$

$$4) 9.3x - 4.1y = 583 \text{ kcal}$$

$$13.4y = 1742$$

$y = 1742: 13.4 = 130$

$y = 130 \text{ gr carbohydrate}$

$250-130 = 120 \text{yog'}$

Research project development

Project topic: Monitoring of the Red Tulip community.

The purpose of the project: to determine the current composition of the red tulip community, its future changes and measures to preserve them.

Methods used in the project: observation, biological statistics, experiments, generalization.

Assignment: If there are 100 tulips in 100 m of red tulip growing area, calculate how the number of tulips in this area will change over 10 years. Graph these changes.

Note: 6 seeds are planted in a red tulip bush and the seedling will bloom in 9-10 years. Each tulip produces 4 bulbs a year and sprouts in 4-5 years. Tulip seed germination rate is 75%.

When lessons are based on these methods, students work independently, think creatively, receive, process and analyze information, all with the help of centers located in the cerebral hemispheres. develops students' deep thinking, motivation to express their views, opinions and independent acquisition of knowledge.

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