

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ТАВРІЙСЬКИЙ ДЕРЖАВНИЙ АГРОТЕХНОЛОГІЧНИЙ УНІВЕРСИТЕТ
РАДА МОЛОДИХ УЧЕНИХ ТА СТУДЕНТІВ



Імус

Матеріали

*V Всеукраїнської науково-практичної
Інтернет-конференції студентів та магістрантів
за підсумками наукових досліджень 2018 року
«ПЕРШІ КРОКИ ДО НАУКИ»*

Мелітополь, 2019 р

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**ANALYSIS OF HUMAN BRAIN FUNCTIONING PRECONDITIONS
AND PRINCIPLES**

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*The article is devoted to the analysis of effective brain functioning,
human brain basic characteristics and peculiarities.*

Problem setting. When working or doing their homework people sometimes keep thinking why they perform some tasks quickly or effectively memorize new data without any assistance. On the other hand, there are tasks for which we have to call for help from our friends, family or partners, so that they can get involved and explain the task and the way of its solving to us. Scientists and teachers usually refer it to human unique ability: the speed, tempo and capacity for work depend on the functioning of our brain. Conducting a research on secrets of the human brain is quite educational and reasonable.

Analysis of recent research shows that the most productive experiments and studies are nowadays conducted by world-wide scientific networks or international centers like EBRA –European Brain Research Area, or Human Brain Research Center. But individual studies of neuroscientists like Idan Segev [1] or Tadashi Isa are [2] are of great value for further research work.

The purpose of this paper is to prove that despite the same structure the brain of each person is developed and works differently, and a person can manage their work.

Basic material research. The hypothesis of this research is an assumption that the brain of different people works unequally and can be trained.

The objectives of this research include:

1. To study the researches on the structure of the human brain.
2. To confirm or to refute the mentioned above hypothesis.

The methods used in the study are:

- collection and analysis of information on this topic;
- observation.

Comparative characteristics of the brain demonstrate that variety fundamentals can be derived from species or gender. The brain is the control center of the body. The proverb about mass and productivity correlation seems to be logical – the bigger the brain, the smarter is its lucky owner. The

example of this mass progressing is: all sorts of insect like bugs have a brain of a few milligrams; mice, squirrels and titmice have brains weighing only about 1 gram, this tendency follow cats (about 30 grams); dogs (about 100 grams) and apes with brain weighing about 400 grams are next in the line. It is commonly known that they cannot be compared to people in their brain activity [3]. The human brain mass is from 1020 to 1970 grams. Following the mass fundamentals, facts are completely incomprehensible: leaving alone horses and cows with a brain weight of 300-400 grams, an average elephant has a brain weight of more than 5 kg, and sperm whales' brain generally weights more than 7kg. The most intelligent and wisest beings on Earth should be considered these giant mammals.

The study of scientific and practical experiment results proves nevertheless that rationality just depends not so much on the size and weight of the brain, but on the ratio of its weight to the total weight of the whole body. And humans have no equal counterparts here. For example, in humans, the ratio of body weight to brain weight is calculated on the average example: 70 kg divided by 1.4 kg give us the correlation 50 times. If, for example, a cow is a calculation object, the ratio 1000 times is resulted; a dog's ratio is 500 times, a chimpanzee's –120 times. The weight of whales' and sperm whales' bodies exceeds the weight of their brain by as much as 3000 times. In general, humans' only and closest counterparts are dolphins, because the brain weight of some species reaches 1,700 grams with a body weight of about 135 kg.

The next question to consider is if there is a difference in the weight of the brain within the human race? The scientific analysis confirms this hypothesis. So, on average, a man's brain weights on average 130 grams more than a woman's brain. The largest brain in the world had the Russian writer Ivan Sergeievich Turgenev, it weighed 2012 grams. Moreover, according to statistics, the Germans have an average brain weight less than the Russians, the Swiss have bigger brains than the Germans, but less than the Russians, the Russians have bigger brains than the Swiss, and the Japanese excel the Russians in their brain size [4].

The structure of the human brain is one more aspect to be considered. The human brain is divided into two hemispheres –the left and the right. The brain has the main lobes. They are the frontal lobe, which is responsible for the human mental abilities, the temporal lobes, which monitor hearing and the occipital lobe which is responsible for the human vision.

The mental abilities depend not so much on the size of the lobes, but on the number of connections between neurons within. And in general, some researchers say that the presence or absence of certain abilities in a person depend on the presence or absence of some special parts in the brain. Moreover, scientists believe that in the right temporal zone there is a special zone – 'a block of genius', with the 'disconnection' of which creative abilities sharply increase. By the way, it is possible

that the answer to the question is right there: why are there many talented people among left-handers? After all, their left and right hemispheres of the brain are as if confused.

In general, human brain is pretty energy consuming. For example, while being in a state called ‘mental rest’ brain consumes 9% of all body energy and 20% oxygen, and in a ‘working mode’ that is a thinking brain, it consumes about 25% of all nutrients entering the body and about 33% of oxygen that is so necessary for the body. In general, it turns out that thinking is not very profitable. And even the question arises: why do people need such a big and ‘gluttonous’ brain then? It turns out that, both in the animal world and in the human, for survival, in addition to saving energy, another factor is very important – the reaction time. And here the human big brain is very much the way. A person uses it as a matter of fact as a large and powerful computer, which turns on when it is necessary to sharply accelerate the solution of complex tasks that require tremendous voltage and quick reaction. Each hemisphere of the brain can actively work only when it is needed to. Hemispheric abilities can also be developed through increasing the amount of work for different hemispheres. It can be achieved by giving work to a specific side of the body: left or right.

Conclusion. To conclude, the brain of all people has the same structure, but it works differently. To improve the quality of the brain functioning people need to train it a lot, for instance, to switch left and right hands while doing simple every day work.

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ЗМІСТ

СЕКЦІЯ 1. ІНОЗЕМНІ МОВИ: НАУКОВІ ПОШУКИ СТУДЕНТСТВА (АНГЛІЙСЬКА МОВА).....	3
ANALYSIS OF ROBOTIZATION PROSPECTS FOR GLOBAL ECONOMY DEVELOPMENT	4
Tereshchenko V., Zaitseva N.V.	
ANALYSIS OF HUMAN BRAIN FUNCTIONING PRECONDITIONS AND PRINCIPLES	7
Biloshytskiy Ivan, Zaitseva N.V.	
THE CURRENT STATE OF FACTORING OPERATIONS IN AGRICULTURE OF UKRAINE.....	10
Komarova K., Lemeshchenko-Lagoda V.V.	
ADMINISTRATIVE-TERRITORIAL REFORM AS A BASIS FOR FISCAL DECENTRALIZATION.....	13
Zakharchuk I., Lemeshchenko-Lagoda V.V.	
A GRAPHICS TABLET AS A TEACHING TOOL.....	17
Kurashkin O., Lemeshchenko-Lagoda V.V.	
СЕКЦІЯ 1. ІНОЗЕМНІ МОВИ: НАУКОВІ ПОШУКИ СТУДЕНТСТВА (НІМЕЦЬКА МОВА).....	21
MODERNE IT – TECHNOLOGIEN BEIM FREMDSPRACHENLERNEN.....	22
Skubtschenko D.O., Smyrnova M.L.	
DIE ANWENDUNG DER PROJEKTMETHODE BEIM FREMDSPRACHENUNTERRICHT	27
Skubtschenko D.O.	
СЕКЦІЯ 2. СУЧАСНІ ДОСЛІДЖЕННЯ В СУСПІЛЬНО-ГУМАНІТАРНИХ НАУКАХ.....	30
ПРОБЛЕМИ РОЗВИТКУ ТВОРЧОСТІ У СТУДЕНТСТВА	31
Кацевич Юлія, Мунтян А.О.	
ЗМІСТ.....	34