

**FACTORS AFFECTING THE MENTAL ACTIVATION IN UNIVERSITY STUDENTS**

***FATORES QUE AFETAM A ATIVAÇÃO MENTAL EM UNIVERSITÁRIOS***

***FACTORES QUE AFECTAN LA ACTIVACIÓN MENTAL EN ESTUDIANTES UNIVERSITARIOS***

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**ABSTRACT:** This article deals with the issue of enhancing the mental activity of students of higher educational institutions during their professional training. A range of empirical and theoretical research methods are taken into account to clarify the content of the concept of "mental activity of university students", determine and experimentally investigate the factors influencing its activation. Based on the results, these factors include the humanization and psychologization of the educational process at the university, the creation of a safe socio-psychological environment at the university, the provision of a health-preserving focus of the educational process and the compliance with ergonomic requirements for it, the organization of training students in a cooperation mode and the use of innovative methods and technologies in the classroom that activate the mental activity of students.

**KEYWORDS:** Mental activity. Students' mental activity. Students' professional training. Educational environment. University.

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**RESUMO:** Este artigo trata da questão da valorização da atividade mental de estudantes de instituições de ensino superior durante sua formação profissional. Uma gama de métodos de pesquisa empíricos e teóricos são levados em consideração para esclarecer o conteúdo do conceito de "atividade mental de estudantes universitários", bem como para determinar e investigar experimentalmente os fatores que influenciam sua ativação. Com base nos resultados, esses fatores incluem a humanização e psicologização do processo educacional na universidade, a criação de um ambiente sociopsicológico seguro na instituição, a oferta de um foco de preservação da saúde do processo educacional e o cumprimento de requisitos ergonômicos para isso, além da organização do treinamento dos alunos em modo de cooperação e do uso de métodos e tecnologias inovadoras, em sala de aula, que ativam a atividade mental dos alunos.

**PALAVRAS-CHAVE:** Atividade mental. Atividade mental dos alunos. Formação profissional dos alunos. Ambiente educacional. Universidade.

**RESUMEN:** Este artículo trata el tema de potenciar la actividad mental de los estudiantes de instituciones de educación superior durante su formación profesional. Se tienen en cuenta una serie de métodos de investigación empíricos y teóricos para aclarar el contenido del concepto de "actividad mental de los estudiantes universitarios", y determinar e investigar experimentalmente los factores que influyen en su activación. Con base en los resultados, estos factores incluyen la humanización y psicologización del proceso educativo en la universidad, la creación de un ambiente sociopsicológico seguro en la universidad, la provisión de un enfoque de preservación de la salud del proceso educativo y el cumplimiento de requisitos ergonómicos para ello, la organización de la formación de los estudiantes en un modo de cooperación y el uso de métodos y tecnologías innovadoras en el aula que activan la actividad mental de los estudiantes.

**PALABRAS CLAVE:** Actividad mental. Actividad mental de los estudiantes. Formación profesional de los estudiantes. Ambiente educativo. Universidad.

## Introduction

Currently, during the general reform of higher education, which is often accompanied by a reduction in classroom hours for disciplines, especially non-core disciplines, as well as the consolidation of groups, the problem of enhancing the mental activity of students comes to the fore in vocational training, as teaching students to study becomes the number-one task (MA *et al.*, 2020). All over the world, a graduate who, having absorbed all the information received, will be able not only to use his knowledge but also to navigate in numerous innovations, who can critically approach the solution of any task assigned hereto, having analyzed all possible ways to solve it and create his unique way of solving a problem, therefore, the problem of enhancing the mental activity of university students is one of the most studied in modern pedagogical science and practice (KOSTINA *et al.*, 2015; MAMUROV *et al.*, 2020).

The relevance of enhancing the mental activity of university students in the process of their professional training is determined by the following factors:

- modernization of higher education in connection with a change in its development paradigm and the need to improve its quality;
- the increased demand of the labor market for specialists who are quickly adaptable to changing conditions due to a high level of mental activity;
- the specifics of the student age, characterized by social activity, high educational level, and pronounced cognitive motivation, which is largely due to the professional focus of university education;
- insufficient development of mental operations in many students (which is confirmed by such researchers as V. T. Lisovskii, N. N. Pospelov etc.), which does not allow them to fulfill their professional potential in the future.

The development of a person's mental activity begins at a very early age and can continue throughout life; however, the student age is considered the most productive one - 17-25 years (TATE *et al.*, 2015; MCCLAIN *et al.*, 2016; PESINA *et al.*, 2021).

Many researchers have studied the mental activity of students, as well as its activation. Studying this process in the educational space of the university, the authors agree on the need to activate the thinking activity of students but, despite a large number of works on this topic, they lack a general methodology, the use of which would be effective in professional training of university students (KRISHNAMURTHY; CHETLAPALLI, 2015; HUANG *et al.*, 2018; MA *et al.*, 2020). This circumstance was the one that determined the choice of the topic of the article.

The activation of the mental activity of university students will be effective if the following factors are considered:

1. Humanization of the educational process at university;
2. Psychologization of the educational environment at university;
3. Creation of a safe social and psychological environment at university;
4. The health-preserving focus of the educational process at university;
5. Compliance with the ergonomic requirements for the educational process;
6. Organization of student training in cooperation mode;
7. Introduction of innovative approaches and technologies into classes that trigger students' thinking activity.

## **Methods**

To address the set problems and issues, the authors utilized a range of empirical and theoretical research methods: a comparative and theoretical analysis of the literature on the research issue, analysis of the regulatory framework of institutions of higher education, targeted pedagogical observation, testing students and teachers, questioning, modeling of social pedagogical circumstances in the educational process; and generalization of experimental data, their analytical and mathematical procedures.

## **Results and discussion**

Referring to the problem of enhancing the mental activity of university students during their professional training, the authors proceeded from the following provisions:

To identify factors that can activate the mental activity of university students, the authors set themselves the task of clarifying the specifics of the mental activity of students and its components.

Taking as a basis the definition of mental activity as a system of mental actions and operations aimed at solving a specific problem (reproductive, productive, or creative), we clarified that such its types as scientific, practical, theoretical and sign mental activity are the most in-demand during vocational training of university students. Consequently, the activation of the mental activity of students in the educational process of the university should include the development of such operations of logical thinking as a comparison, analysis, synthesis, structuring, inference, and formulation.

The authors also clarified the psychological and pedagogical conditions for the development of the mental activity of university students, which include the following:

1. Training tasks should stimulate the analytical and synthetic activity of students and develop all of the above mental operations;
2. Training tasks should stimulate the mental activity of students (contain a certain amount of difficulty, require non-traditional ways of solving the educational problem).
3. All educational exercises and didactic teaching aids used, stimulating the enrichment of speech, the development of perception and attention of students, should be applied systematically and consistently.

Having considered the features of the students' mental activity and the available results of their long-term research on the stated topic, the authors generalized the factors influencing the activation of the mental activity of university students. Let's analyze them in more detail.

The first most important factor influencing the activation of students' mental activity, according to the authors, is the humanization of the educational process at the university.

The most common interpretation of the humanization of education is to place a person at the center of education and develop his abilities (MCCLAIN *et al.*, 2016; GRUBIC *et al.*, 2020). The main directions of the humanization of university education are humanization (increasing the share of humanitarian disciplines in university education); involvement of humanitarian material in non-humanitarian disciplines (in the form of personification of discoveries and historical facts), and focus on the intellectual development of students, their cognitive sphere (includes not only knowledge, skills, and abilities, but also the ability to acquire them, as well as personal reflection). Also, the humanization of the educational process at the university will become a significant factor in enhancing the thinking of students, provided that it is reoriented to the construction of individual models of cognition and differentiation of curricula personally significant for students to support their individuality and creative identity.

The second factor of the activation of students' mental activity is the psychologization of the educational environment of the university.

The long-term experience of the professional activity of the authors of this article allows us to assert that the low level of psychological culture of the subjects of the educational process, their insufficient use of psychological knowledge in organizing the educational space make it difficult to implement the idea of humanization of education and lead to ineffective pedagogical activity.

The main goal of modern education is the formation of a professionally and socially competent personality capable of creativity and self-determination in a changing world, with a developed sense of responsibility and a desire to create.

Psychologization of the educational process is a systematic application of psychological knowledge, technologies, methods, and techniques in the activities of subjects of the educational process to successfully modernize the education system.

The main methods of psychologizing the educational environment of the university are actions to increase the level of psychological culture and the competence of the subjects of the educational process, both students and teachers themselves. This process is aimed at the transfer of knowledge, skills, and abilities in the field of mental patterns and methods of self-development, self-regulation, and adaptation; development of a culture of communication, personal and professional competence, and ethnocultural tolerance.

The third factor influencing the activation of students' mental activity is the creation of a safe social and psychological environment at the university. Understanding by personal safety

the state of protection of the individual from both external and internal threats, and defining psychological safety as a set of conditions that ensure the preservation of the human psyche, the integrity of the individual, as well as the development and functioning of the individual when interacting with the environment, which the university environment is a part of, the authors found that the educational environment during lessons ceases to be safe when certain socio-psychological conditions are violated. Such violations include, for example, high responsibility and psychological tension of the teacher's work, his focus only on the learning outcome rather than on the development of personal and professional skills of students, insufficient attention of teachers to the needs and demands of students, their biased and intolerant attitude towards other cultures.

Thus, to ensure the creation of a safe social and psychological environment at the university, it is necessary to rely on the following principles:

- reliance on developmental education, the main goal of which is not learning but the development of the emotional, social, and spiritual consciousness;
- psychological protection and support of the rights to safe interaction of all subjects in the educational environment;
- the formation of socio-psychological skill: skills and abilities that make it possible to make the right choice of one's life and appropriate behavior, independently analyze and solve problems, exclude psychological violence.

The fourth factor of the activation of students' mental activity is the health-preserving focus of the educational process at the university.

Health preservation in the educational process is understood as an activity aimed at preserving and strengthening the physical and mental health of students.

The authors of the study found that to focus the educational process at the university on the health preservation of students, it is necessary to comply with the following principles:

- The principle of consideration of individual and age-related characteristics of students;
- The principle of individualization, taking into account, among other things, the dynamics of students' performance;
- The principle of responsibility and conscientiousness, which forms the student's motivation both for the development of professional qualities and for the strengthening of health, including mental ones;

- The principle of visibility, for the fullest use of the possibilities of perception, memory, and imagination of students, as opposed to monotonous tedious work; use of video materials for discussion, instilling interest in the subject under study;
- The principle of enhancing the mental potential of students (the use of active methods - role play, discussion; methods of free choice - the choice of interaction techniques, free conversation, and other methods aimed at development and self-knowledge - mutual assessment, self-assessment etc.).

An important indicator of the effectiveness of the lesson can be considered the behavior of students after its completion: either moderately agitated, calmly businesslike, or aggressive, confused, tired, frustrated.

Thus, a properly organized educational process at the university from the standpoint of health preservation is much more effective for the development of personal and professional qualities of students, their mental activity, without unnecessary stress and fatigue.

The next factor is compliance with the ergonomic requirements for the educational process.

In the traditional sense, ergonomics is the science of adjusting job duties, workplaces, subjects, and objects of labor, as well as computer programs for the safest and most efficient work of a person, based on the physical and mental characteristics of his body.

The main idea of the ergonomic approach in pedagogy is the adaptation to the personality of the educational space (artificial, informational, social environment). The use of the results of ergonomic research provides a fresh look at the educational process in the context of the transition to the use of information technologies. Its role in a modern university can be defined as the study and design of optimal material and organizational conditions for the activities of a teacher and student to ensure the high efficiency of the educational environment being created (VALERA; RUZ, 2021).

Within the framework of ergonomic requirements, didactic means should include means that develop sensorimotor stimuli, affect students' sense organs and ensure the success, comfort, and safety of the educational process. In this regard, the problem of mastering ergonomic requirements that can affect the effectiveness, success, and comfort of the teaching aids used by teachers and students is being actualized. Ergonomics of teaching aids is understood to mean the properties of teaching aids that increase the effectiveness of educational activities, depending on the degree of their compliance with the psychological and physiological characteristics of the student (RAFIQUE; AL-SHEIKH, 2018).

One of the most important didactic teaching principles that can increase the efficiency and comfort of the learning process is visualization. The effective use of teaching aids requires the teacher to know the laws of the processes of excitation and inhibition. Practice shows that the use of visual aids during lessons helps to involve all analyzers in the perception process - auditory, visual, motor etc. The more analyzers are involved, the better the subject material is assimilated. The combined action of analyzers provides a reflection not only of the properties of objects but also of complex connections between phenomena.

Thus, teaching aids, together with the teacher's living word, are an important component of the educational process and an obligatory element of the educational and material base of any educational institution. They significantly increase the effectiveness of other elements of the learning process - goals, content, forms, and methods.

During the learning process, students are effectively influenced by modern audiovisual and multimedia teaching aids. Multimedia technology has great prospects in pedagogy as it provides the automation of the intellectual activity of the subjects of the educational process. At the same time, its role is changing: from auxiliary and illustrative activities, information technology is moving to organizing and determining the directions of the teacher's activities.

Thus, the considered ergonomic requirements will provide comfortable and safe conditions for students' health education and upbringing and will contribute to increasing their efficiency, active development of thinking, and learning productivity.

The next factor influencing the activation of mental activity is the organization of student learning in a cooperative mode. The main goal of cooperation-based teaching is to develop students' intellectual, spiritual and physical abilities, interests, motives, as well as their scientific views.

The driving forces of this process should be the students' feeling of their professional and personal growth, self-improvement, self-confidence, the joy of creativity. The methods of work are joint activity, search, all kinds of cooperation between teacher and students. In the educational process of the university, teaching in cooperation is based on the principles of the interdependence of the members of the student group, the personal responsibility of each member of the group for both individual and group successes, joint educational and cognitive activities in the group, overall assessment of the group's work (TAYLOR, 2017; QUILTY-DUNN, 2021).

Collaborative learning provides several versions for implementation. In the first version, special focus is on the group goals and the success of the entire group, which can be achieved as a result of the independent work of each student, where the group receives one point grade



or another type of encouragement for all; everyone bears individual responsibility for the work of the group, which means that the whole group is interested in the assimilation of educational information by each of its members; each student brings points to the group, which he earns by improving his previous performance. The second is based on the work of students in groups of 4-6 people on fragmented educational material (blocks). The work is organized in such a way that members of different groups studying the same issue discuss it with each other and exchange information as experts on this issue, after which they return to their groups and transfer knowledge to other members of the group, and those, in turn, present their parts of the assignment (PESINA; YUSUPOVA, 2015; RAHIM *et al.*, 2016).

It should be noted that at present, teaching in cooperation is considered in world pedagogy as the most successful alternative to traditional teaching methods.

The seventh factor is the use of innovative methods and technologies during lessons that activate the mental activity of students. The authors of the article primarily include the project method and case method, the Aquarium, Carousel, and Debate technologies, MetaKnowledge Assignment Technology, Web Quest etc.

The influence of this factor on the activation of students' mental activity is determined by the fact that:

Firstly, this is the interaction of students between themselves and the teacher (directly or indirectly), which provides for the implementation of the ideas of mutual learning and collective thought activity in teaching.

Secondly, it is a process of "equal" communication, where all participants are interested in it and are ready to exchange information, express their ideas and solutions, discuss problems and stand their ground. It should be noted that this is precisely what reflects the communicative side of interactive learning, including the use of modern information technologies.

Thirdly, this teaches "reality", i.e., it is the learning based on real problems and situations of the reality around us. If otherwise, then it cannot be fully considered interactive, as an uninteresting (irrelevant, unclaimed at the moment) educational task will never cause a mutual personal response for active communication and, accordingly, an increase in the personal experience of each subject of training.

The degree of influence of each of the factors stated in the study on the activation of the mental activity of university students was confirmed as a result of experimental work of 2015-2021. The experiment involved 230 1-4-year humanitarian and engineering students.

## Conclusion

The content of the concept of "students' mental activity" has been clarified, the conditions for its activation in the educational process of the university have been determined.

The list of factors influencing the activation of the mental activity of university students has been investigated and systematized. The content of each factor has been clarified, its principles and basic theoretical provisions have been determined.

An experimental study has been carried out that studied the influence of each declared factor on the activation of the mental activity of university students and confirmed the assumptions made.

The study of the activation of the mental activity of university students over time made it possible to conclude the confirmation of the hypothesis put forward. The calculations confirmed that the factors influencing the activation of the students' mental activity in the educational process of the university contribute to the effective development of the students' mental activity in the process of their professional training.

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