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## CONTENTS

### Pedagogy and psychology

**Svitlana Yakymenko, Natalya Bozhok.** Pedagogical skills in the pedagogy of kindness of Ivan Zyazyun..... 5

**Inessa Vizniuk, Serhii Dolynnyi, Anna Polishchuk, Victoria Kylyvnyk.** The main results of the initial diagnosis of socio-cultural competence of future foreign language teachers ..... 11

**Anna Zadorozhna, Kateryna Volokhata.** Value-motivative self-assignment of moral and legal norms in children..... 19

**Sofia Dembitska, Iryna Kobylanska, Oleksandr Kobylanskyi, Volodymyr Tatchuk, Serghiy Pugach.** Method of the assessment of the professional competence formation..... 31

**Tamara Makukh, Alla Zaluzhna, Viktoriia Chopei, Svitlana Gumenyuk.** Economic culture and features of its formation in an interdisciplinary dimension 42

**Volodymyr Umanets, Yaroslav Anhelov, Alla Lisova.** Use of immersive technologies in teacher training ..... 49

**Iryna Chaika.** Features of the influence of family relations on the self-actualization of elementary school teachers ..... 56

**Volodymyr Umanets, Vadym Podlisovskyi, Larisa Filipenko.** The use of digital technologies in education in the context of professional training of future teachers of vocational education (digital technologies) ..... 63

**Liudmyla Shevchenko, Vitaliy Tytarenko.** Formation of professional competence of design and decoration works' specialists in graphics editors..... 69

### Philosophy and theology

**Vitalii Ihnatiev, Anatolii Sustrietov, Olha Nackonechna, Alla Zaluzhna, Andrii Bobryk.** Non-classical epistemology of V. Lektorsky ..... 81

## **History**

**Anna Polishchuk, Halyna Matushok.** Changes in the teacher and student composition in the network of institutions of higher education in the Khmelnych region..... 92

## **Law**

**Kostiantyn Harbuziuk, Valentyn Melnyk, Oleksandr Husarov.** Labour law principles of public administration bodies staffing legal regulation ..... 99

**Leonid Mohilevskiy, Evhen Podorozhnii, Artem Podorozhnii.** The place and importance of legal liability in the labor law system of Ukraine ..... 110

**Lesya Myskiy, Vladyslav Neviadovskyi, Anton Ivanov.** State administration of the system of inclusive education in Ukraine: current condition and prospects for development..... 119

## **Sciences of physical education**

**Viktoriia Bohuslavska, Ivan Hubar, Serhii Drachuk, Vadym Poliak.** Current state and prospects of development of theoretical training in sport..... 130

## **Medicine and dentistry**

**Olena Nefodova, Kateryna Kushnarova, Inna Shevchenko, Viktoriia Rutgaizer, Dmytro Kryzhanovsky.** General mechanisms and strategies for solving the problems of neurodegeneration..... 135

**Olena Nefodova, Olga Kuznetsova, Inna Shevchenko, Viktoriia Rutgaizer, Tatyana Kvyatkovska.** Complexity of the final control of knowledge in the discipline “human anatomy” of the second year students of the Dnipro State Medical University..... 146

**Oleksandr Nefodov, Olga Kuznetsova, Vladyslava Hruzd, Mykola Zharikov, Volodymyr Myakushko.** Multiple sclerosis: features of the course of the disease . 153

**Maksym Anisimov, Stanislav Shnaider, Liudmyla Anisimova.** Graphical modeling of lower jaw size ratios for technological improvement of mandibular anesthesia ..... 165

## **PEDAGOGY AND PSYCHOLOGY**

### **PEDAGOGICAL SKILLS IN THE PEDAGOGY OF KINDNESS OF IVAN ZYAZYUN**

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**Annotation.** *The article reveals the peculiarities of the use of the pedagogy of kindness in the legacy of Academician Ivan Zyazyun and methodological principles of professional development. The methodology of formation of pedagogical skill on the leading ideas of Ivan Zyazyun is revealed. Innovative approaches to the development of professional skills of teachers on the basis of IA Zyazyun are proposed. The essence of the developed interactive simulator of pedagogical skill is revealed and the innovative approach of self-development of teachers during all life is offered. He also drew attention to the peculiarities of using the pedagogy of Kindness in creating an educational environment. In addition, the theoretical approach of Academician Ivan Andriyovych Zyazyun to the definition of professional skills of a teacher is revealed in detail and an important element of humanistic education is revealed - "subject-subject" relations between teachers and students.*

**Keywords:** *humanism, pedagogy of kindness, pedagogical skill.*

Transformations in the Ukrainian educational environment on the basis of humanism, democracy, national consciousness require the definition of new strategic and tactical guidelines in the field of higher education schools. The leading direction in the process of preparing students for teaching activity is a humanistic focus of the educational process on the disclosure of potential opportunities and abilities of the individual and the establishment of universal values.

Pedagogy of good is a leading life, professional and methodological principle, which was followed by Academician Ivan Zyazyun as a person, citizen, teacher, philosopher and leader during his scientific and scientific-pedagogical activities. He was the founder of a unique school of pedagogical skills, the methodology of which is used in the modern educational space. However, socio-cultural changes require the adaptation of I.A.Zyazyun's leading ideas into a qualitatively new educational space with the use of models of the international educational space and the use of the latest technologies.

The progress of mankind is made possible by the enrichment of the historical experience in various fields of social development. The more it happened the expansion of the scientific and information environment, accompanied by the accumulation of new knowledge, the more acute was the problem of purposeful transmission of positive

human experience to future generations. Therefore, the development of the pedagogical field is an objective need at all historical stages of transformation of society. Therefore, the problem of professional development of teachers has attracted the attention of many prominent thinkers, writers, teachers who have made a significant contribution to the history of the national pedagogical school (G. Skovoroda, O. Dukhnovych, B. Grinchenko, M. Kostomarov, P. Kapterev, K. Ushinsky, V. Sukhomlinsky, A. Makarenko, S. Amonashvili and others) [2].

I. Zyazyun's pedagogical heritage allows us to state that the core idea of practical training of future teachers is a humanistic approach to the organization of the educational process, respect for the personality and subjectivity of the student and teacher. The basis of the system of their practical training was and remains a thorough pedagogical practice. It is a person-centered, humanistic, and subject-oriented learning. The ideas of pedagogy for the good of Ivan Zyazyun have not lost their relevance. They live and work in our time, found their continuation in the Concept of state policy in the field of reforming general secondary education «New Ukrainian School» for the period up to 2029 (2016), the Law of Ukraine «On Education» (2017) [1].

The New Ukrainian School (NUS) is a key reform of the Ministry of Education and Science of Ukraine. The main goal is to create a school that will be pleasant to study and that will give students not only knowledge of how it is happening now, but also the ability to apply them in life. NUS is a school that is a pleasure for students to go to. Here they listen to their opinion, teach to think critically, not be afraid to express their own opinion and be responsible citizens. At the same time, parents also like to attend this school, because there is cooperation and mutual understanding. They have to work at the New Ukrainian School to prepare future teachers of higher education institutions, guided by the requirements of the present and using the domestic experience of their practical training.

I.A.Zyazyun carried out a deep philosophical and pedagogical analysis of educational processes in higher education, which led to the following conclusion: in the development of higher pedagogical education in Ukraine XX - early XXI century. two tendencies are distinguished: transformation of pedagogical institutes into pedagogical universities; transformation of pedagogical universities into classical ones. If this trend continues, we can predict the complete loss of the system of higher pedagogical education in our country, which is a great national heritage [3].

His experience I.A.Zyazyun summarized in his iconic books published in Ukraine and abroad, in particular the didactic complex «Pedagogical skills», «Beauty of pedagogical action», «Pedagogy of good: ideals and realities» and others, have become widespread in Zhytomyr region and contribute to effective preparation of future teachers in higher educational institutions, help to increase the pedagogical skills of teachers-practitioners and scientists.

Thus, in the textbook «Pedagogy of good: ideals and realities» the then Poltava rector substantiated 10 basic principles vital activity of the higher pedagogical educational institution.

It is known that during the last quarter of the XX - beginning of the XXI century the world underwent global transformations, socio-economic changes, rapid information technology development. All this could not but affect the pedagogical education, which in its essence must be objectively advanced. Transformational processes have led to changes in the conceptual and terminological apparatus of pedagogy, as «a system of pedagogical terms, the set of meanings of which is a system of pedagogical concepts (identical to it).» In this regard, the meaning of the concept of «pedagogical education» is significantly deepened and expanded. Along with the above interpretation, its content is supplemented by aspects related to the training of teachers to implement the concept of continuing education - lifelong learning, in particular: vocational training, vocational training and retraining of the unemployed, additional education for various categories of citizens, including and the third age. I.A.Zyazyun emphasized that when it comes to andragogy (the section of pedagogy on stimulation and direction of the processes of education and training of adults), the features of personal and professional ontogenesis in the period of maturity are considered [1].

The relevance of this issue is explained on the one hand by the fact that individual characteristics (attitudes, needs, interests, level of claims, features of intelligence, etc.) significantly affect the choice of profession and the course of professional adaptation. According to the scientist, they can both contribute to the formation of professional skills and a creative approach to labor activities, and interfere with professional development (for example, in the absence of general professional abilities - activity, self-regulation, resistance to obstacles, etc.), which leads to faster professional aging and deformation (negative socio-psychological and mental changes in professional activities). I.A.Zyazyun stressed that adult education is characterized by continuity and appropriate technologies. Regarding the latter, it is worth noting what is meant by «educational technology», how natural is its introduction into scientific circulation, what is the relationship of this term with the traditional concepts of «educational theory» and «educational methods». Thus, in modern conditions, adult education has become more important, as its content includes professional and pedagogical training of citizens involved in educational activities in various socio-cultural and industrial systems. At the same time, it is appropriate to emphasize the personality teacher, to the quality of his professional and pedagogical activities, to him - as a subject of the educational process, the subject of pedagogical communication are new, increased requirements. In turn, this significantly affects the expansion of the set of interrelated tasks entrusted to teacher education [4].

The next important aspect in humanistic education, which I.A.Zyazyun points out, is the need for subject-subject relations between teachers and students: “An important and difficult task is to translate the content of education into the inner world of the individual. To do this, it is necessary to organize psychologically sound activities of two equal in relation to the subjects: teacher - student, seeking to actualize the formation of students’ intrapersonal motivation while meeting their essential (existing and formed) needs. We are talking about educational technology - the internal organization of content, is

the logic and structure of content in the context of the relationship of participants in educational, including pedagogical activities [2].

According to I.A.Zyazyun, the core idea in the formation of professional skills of a teacher should be the use of a humanistic approach to the organization of the educational process, education of respect for the individual and subjectivity of both students and teachers. In his scientific works I.A.Zyazyun defines professional skills as a holistic system of such components: pedagogical orientation of the teacher's personality, professional knowledge (knowledge of the subject, methods of its teaching, theoretical foundations of pedagogy and psychology), ability to pedagogical activities [2]. Pedagogical skill is a kind of set of personal culture, knowledge and worldview of the teacher, his comprehensive theoretical training with the improvement of mastering the techniques of teaching and education, pedagogical technology and best practices. At the same time, it is a type of activity that mainly affects the internal sphere of the teacher: the desire to become a master of pedagogical work; belief that skill provides not only high productivity, but also a sense of satisfaction from it, establishing itself as a specialist. The main priorities of the scientific school of pedagogical skills of Academician I.A.Zyazyun are the improvement of their own practical pedagogical activities, the use of pedagogical experience of colleagues and more. His pedagogical achievements are highly appreciated not only in Ukraine but also abroad. The academic books cover the theoretical basis and methodological principles for professional development of each teacher. As is well known, Ivan Andriyovych was the initiator of the creation of centers of pedagogical skills in different regions of Ukraine. Most of them are active today, launching new directions and continuing the "Pedagogy of Good".

In modern education, pedagogical skills are considered from the standpoint of different approaches and are understood as: a set of properties and qualities of the teacher's personality that ensure the effectiveness of his pedagogical activities on a reflective basis; system of professional competencies of a teacher, technology of pedagogical action; the highest level of pedagogical activity, etc. I.A.Zyazyun's theory of pedagogical skill contributed to the beginning of new directions of scientific research on this problem, in particular: on the history of pedagogical skill development, realization of ideas of pedagogical skill in creativity of outstanding teachers of Ukraine; development of professional competencies and personal qualities of teachers [4]. Experience shows that the formation of pedagogical skills is impossible without constant attention and consideration of the psychology of pedagogical activities, the personality of the teacher, because the personality of the teacher - is the main factor in raising children, and pedagogical skills - is a synthesis of personal qualities of the teacher. abilities and skills are a tool of professional activity. Thus, the main elements of a teacher's pedagogical skills are professionalism, competence, productivity, socially oriented personal qualities. I.A. Zyazyun notes: "The essence of skill is in the personality of the teacher, in his position, ability to show creative initiative on the basis of realization of own system of values. Mastery is a manifestation of the highest form of activity of a teacher's personality in professional activity, activity based on humanism and revealed in the appropriate use of



methods and means of pedagogical interaction in each specific situation of teaching and education” [3].

Continuity of education is always an important aspect for a teacher. The philosophical and pedagogical idea of continuity of education embodies several semantic goals. This is primarily the awareness of education as a process that covers all human life, continuous purposeful assimilation of socio-cultural experience using all parts of the existing educational system, adherence to the principle of education, education policy aimed at creating conditions for lifelong learning, ensuring interconnected and continuity of different levels of education.

The basis of professional skill is professional competence - an integral, dynamic combination of knowledge, understanding, skills, values, abilities, attitudes in the appropriate context and a set of qualities. Competence is also seen as a general ability based on knowledge, experience, values that a person acquires in the learning process, the ability to apply knowledge in practice. Among the main competencies are the ability to learn throughout life. Professional and pedagogical competence is a complex structure, the elements of which include a number of other competencies of a modern teacher: competence in the field of theory and methods of educational process, competence in professional subjects, socio-psychological competence, differential psychological, etc.

The formation of pedagogical skills in primary school teachers is a multifaceted stage that requires the involvement of the teacher in this process. It is worth noting that sociological research shows that the success of his students depends on the motivation of teachers to professional activities. Our project aims to help a motivated teacher to pump SOFT and HARD SKILLS.

The interactive simulator is an application for smartphones with the android version. The work includes the theoretical basis of scientific developments of domestic teachers – V.O.Sukhomlinsky and I.A.Zyazyun. The scientific achievements of scientists define the professional skills of teachers as part of the following categories: pedagogical abilities, pedagogical interaction, humanism (according to V.O. Sukhomlinsky) and pedagogical orientation of the teacher’s personality, professional knowledge, ability to teach, pedagogical techniques (according to I.A. Zyazyun ). Therefore, the developed Interactive simulator of pedagogical skills on the basis of the methodological base of V.O. Sukhomlinsky and I.A. Zyazyun consists of the following sections:

Main - information about the essence of the Interactive Simulator and the scientific base of scientists V.O. Sukhomlinsky and I.A.Zyazyun on the formation of professional skills.

About developers - information about the people who created the Interactive Simulator.

Pedagogical orientation - contains the theoretical basis that defines the specified category, the questionnaire - the author’s method, which allows to determine the level of formation of pedagogical orientation and methods that allow for self-development in this category.

Pedagogical interaction - contains the theoretical basis that defines the specified

category, the questionnaire - the author's method, which allows to determine the type of communication between teachers and methods that allow for self-development in this category.

Pedagogical abilities - contains the theoretical basis that defines the specified category, the questionnaire - the author's method, which allows to determine the level of formation of pedagogical abilities and techniques that allow for self-development in this category.

Professional knowledge - contains the theoretical basis that defines the specified category, the questionnaire - the author's methodology to determine the level of pedagogical knowledge and techniques that allow for self-development in this category.

Pedagogical technique - contains a theoretical basis that defines the specified category and techniques that allow for self-development in the specified category.

Humanism - contains a theoretical basis that defines the specified category, and techniques that allow for self-development in the specified category.

The interactive simulator was developed on the WIX platform and uploaded to the Play Market system for open access to anyone. The resource is currently being tested on the Google system. It is expected to be downloaded for free download to anyone wishing to develop their pedagogical skills. The information system is designed for teachers who are engaged in self-education throughout life. It is planned to further expand the functions and capabilities of the application "Interactive simulator of pedagogical skills based on the methodological base of VO Sukhomlinsky and I.A.Zyazyun.

The methodology of further research involves the study of the technology of using the Interactive simulator of pedagogical skills in the educational process. It is also important to select quality information resources for the development of professional skills of teachers throughout life.

#### References:

1. The concept of the new Ukrainian school [Electronic resource] - Access mode: [http://mon.gov.ua/activity/education/zagalna-serednya/ua-sch\\_2016/konczepczyia.html](http://mon.gov.ua/activity/education/zagalna-serednya/ua-sch_2016/konczepczyia.html)
2. Zyazyun IA Intellectually creative development of personality in continuing education. Continuing professional education: problems, searches, prospects: monograph / ed. IA Zyazyun. Kyiv: Vipol, 2000. 636 p.
3. Zyazyun IA Philosophy of pedagogical worldview / Ivan Andreevich Zyazyun // Professional education: pedagogy and psychology. Ukrainian-Polish magazine. / Ed. I. Zyazyun, T. Levovytsky, N. Nychkalo, I. Vilsh. - Kyiv-Czestochowa: Publishing House of the Higher Pedagogical School in Chekhonstov, 2012. - Issue. 6. - P. 209-222.
4. Zyazyun IA Philosophy of pedagogical quality in the system of continuing education / IA Zyazyun // Bulletin of the Zhytomyr State. University named after I. Franko. - 2005. - № 25. - P. 13-18

## THE MAIN RESULTS OF THE INITIAL DIAGNOSIS OF SOCIO-CULTURAL COMPETENCE OF FUTURE FOREIGN LANGUAGE TEACHERS

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**Annotation.** *The article substantiates the main results of the initial diagnosis of socio-cultural competence of future foreign language teachers by the level of its formation. This study showed the insufficient level of socio-cultural competence of future foreign language teachers and confirmed the need to develop and implement in the educational process of pedagogical colleges pedagogical conditions and structural-functional model of socio-cultural competence of students.*

**Keywords:** *socio-cultural competence, pedagogical college, future foreign language teachers, pedagogical conditions.*

The importance of forming the socio-cultural competence of a foreign language teacher in the process of forming professional competence is one of the urgent tasks, as noted by domestic and foreign scholars. The training of socio-culturally competent foreign language teachers overcomes the contradiction that has arisen between society's need for competent foreign language teachers and the insufficient level of preparation of students in pedagogical colleges for socio-cultural activities; between the recognition of socio-cultural competence of an important role in the personal and professional development of future foreign language teachers and insufficient development of scientific and methodological support for the development of socio-cultural competence of future foreign language teachers in the system of pedagogical college; between the dominant focus of the pedagogical process in pedagogical colleges on the formation of students' subject-professional knowledge and skills and insufficient attention to the formation of socio-cultural competence of future foreign language teachers.

Analysis of domestic and foreign philosophical, cultural, psychological and pedagogical literature showed that the problem of forming socio-cultural competence of future foreign language teachers is interdisciplinary and is one of the main tasks of higher education in Ukraine, which needs to be addressed.

Issues of formation of professional, general cultural, intercultural and sociocultural competence of future foreign language teachers are considered in the dissertations of Ukrainian researchers (I. Zakiryanova, I. Kushnir, T. Nesvirska, S. Shekhavtsova, etc.); features of the formation of linguistic personality were studied by scientists G. Bogin, E. Borinstein, N. Galskov, I. Zimnya, Y. Karaulov; V. Krasnykh, Yu. Pasov, V. Safonov, O. Selivanova, S. Ter-Minasova, G. Tomakhin, and others studied the mechanisms of mastering the corresponding culture while studying a foreign language. Scientific works cover some aspects of the formation of socio-cultural competence of future foreign language teachers in both educational and extracurricular activities of students [1 - 6].

Therefore, it is important to state the formation of socio-cultural competence of future foreign language teachers according to the main results of the initial diagnosis of their socio-cultural competence.

**The purpose of the article** is to substantiate the formation of socio-cultural competence of future foreign language teachers based on the main results of the initial diagnosis of their socio-cultural competence.

Experimental work was carried out on the basis of Vinnytsia Humanitarian and Pedagogical College, Korostyshiv Pedagogical College named after I. Ya. Franko, Uman Humanitarian and Pedagogical College named after Taras Shevchenko, Belgorod-Dnister Pedagogical School, Chortkiv Humanitarian and Pedagogical College named after Alexander Baltic Pedagogical School. A total of 396 students took part in the experiment.

According to the generalizing results of the ascertaining research the actual state of formation of sociocultural competence of future foreign language teachers is analyzed, the efficiency of pedagogical conditions and structural-functional model of formation of professional self-consciousness of future teachers is substantiated and experimentally checked [4, 5].

Table 1 presents the generalized results of the formation of socio-cultural competence of future foreign language teachers at the beginning of the experiment (in absolute numbers,%).

*Table 1*

**Generalized results of the levels of formation of socio-cultural competence of future foreign language teachers at the beginning of the experiment (in absolute numbers,%)**

Groups	Levels							
	High		Sufficient		Basic		Initial	
	persons	%	persons	%	persons	%	persons	%
Control	17	8,5	26	13	77	38,7	79	39,7
Experimental	18	9,1	26	13,2	77	39,1	76	38,6

As can be seen from Table 1, which presents the generalized results of the initial diagnosis according to four criteria, before the experiment in EG were 40.4% of students with the initial level of socio-cultural competence, in CG – 41.4%; 41.5% of students had a basic level in EG, and 40.2% in CG; with a sufficient level in EG as 11.1%, and in CG – 11.7%; with a high level in EG 7%, in CG – 6.7%.

The diagram (Fig. 1) presents the generalized results of the initial diagnosis of socio-cultural competence of future foreign language teachers. As can be seen from Table 1, before the experiment in EG there were 37.7% of students with the initial level of socio-cultural competence according to this criterion, in CG – 39.7%; 47.4% of students had a basic level in EG, and 44.1% in CG; with a sufficient level in EG was 9.9%, and in CG – 11.7%; high results were shown in EG by 5.3%, while in CG – 4.5%.

Qualitative analysis of the obtained data showed that a significant part of the respondents have a low level of motivation in mastering and future use of socio-cultural knowledge in pedagogical practice; they do not yet see the need for such knowledge, do not understand their significance for future professional activities. Therefore, of course, these students do not feel the need to form socio-cultural competence; they never thought about this problem and did not set themselves such a task. It is worth noting the sometimes not very tolerant attitude of students towards representatives of different ethnic groups, speakers of different languages and cultures. We noticed this by observing future teachers both during specially created pedagogical situations, and during conversations, excursions, “round tables”, where they had the opportunity to speak openly on certain issues, without worrying that they are wrong will understand. It is worth noting that during the experiment we always tried to create an atmosphere of trust, support and understanding.

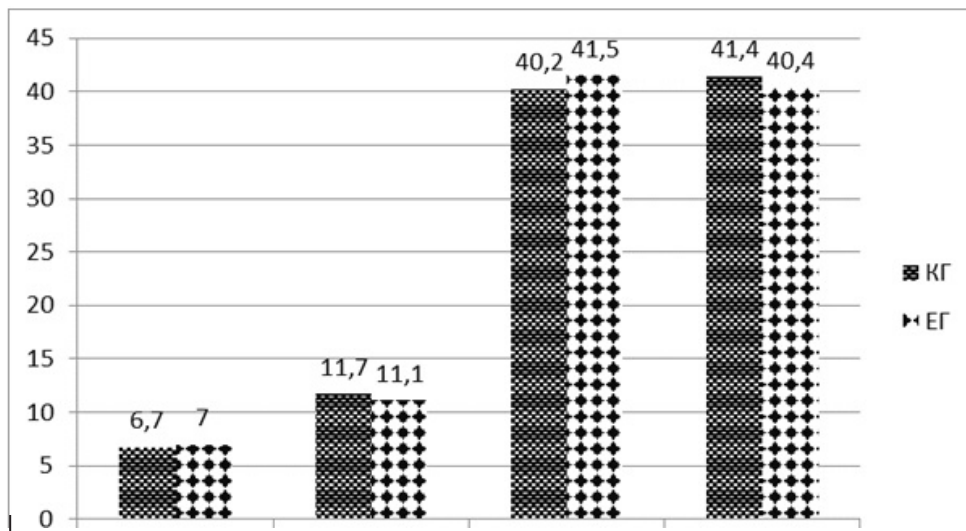


Fig. 1. Generalized results of the initial diagnosis of socio-cultural competence of future foreign language teachers.

As can be seen from Figure 1, before the experiment in the experimental and control groups, the level of socio-cultural competence of future foreign language teachers was almost identical.

At the same time, we conducted a survey of graduate students (4th and 5th) of pedagogical colleges on the basis of which an experimental study was conducted, which showed the following results.

To the question “How do you understand the concept of” competence “?” 73% of respondents gave a superficial answer, limiting themselves to only one component of competence, namely knowledge: “... is knowledge of their subject (for teachers) or simply knowledge of their profession, all its details.” 15% of 4th year students identify the concept of “competence” with authority. 8% of respondents gave a somewhat broader understanding of the concept of “competence” as a person’s acquired ability in the learning process, which consists of knowledge and experience that can be implemented in practice. Finally, 4% of 4th year students - future foreign language teachers showed a fragmentary understanding of the concept. An example of the answer we refer to these four percent is: “Correctness, method, accuracy, awareness.”

The vast majority of respondents (81%) gave a superficial answer to the second question of the questionnaire about the essence of the concept of sociocultural competence of a future foreign language teacher, as awareness of the country of the language being studied, its customs and traditions. 7% equate socio-cultural competence with communicative abilities or skills as ensuring successful communication of a future teacher with representatives of a foreign language culture. 5% of students repeated their answer to the first question: “The essence of socio-cultural competence of the future teacher of a foreign language is that the teacher must be well aware of their field of activity.” 4% of the total number of respondents do not associate the concept with the activities of teachers: “It is the ability to apply knowledge about the country to reach an understanding with its representatives.” 3% of students could not answer the question.

Despite the unsatisfactory, in our opinion, understanding of graduate students - future foreign language teachers - the meaning of “competence” and “socio-cultural competence”, 25.4% of respondents answered the third question of the questionnaire said that the formation of socio-cultural competence of future foreign language teachers in the pedagogical college is very important, and 74.6% - important. No student chose the option “not very important” and “unimportant”.

In answering the fourth question about the subjects that have the greatest potential in shaping the socio-cultural competence of future foreign language teachers, students mentioned obvious subjects: cultural studies, world literature, practical English course, lexicology, history, geography in different variations. Only one subject - culturology or local lore - 6.9% of respondents answered this question. There were no students who did not answer this question.

The purpose of the sixth question was to clarify the depth of students’ awareness of the need for effective implementation of the procedural component of pedagogical activities in teaching the subject in order to form socio-cultural competence, not just content.

We believe that graduates who have knowledge of psychological and pedagogical disciplines and have undergone various types of pedagogical practice should have a sufficient level of professional competence to answer this question. However, the students had some difficulties in answering this question of the questionnaire. In fact, none of them could fully answer him. 21% of students mentioned the subject, the topic of the lesson, and intuitively stated: “During the study of this topic will be formed, the cognitive component of socio-cultural competence”; 63% mentioned only the subject and topic, and 16% of respondents did not answer this question at all.

Duplicating this answer was the answer to the question: “Give an example of a foreign language topic, indicate the methods, techniques, approaches by which high school teachers will be able to form a specific component of socio-cultural competence”, so we will not dwell on its analysis.

Regarding the answer to the questionnaire on improving the effectiveness of socio-cultural competence of future foreign language teachers in college, the vast majority of students (67.3%) named the following forms, methods and techniques that help improve foreign language skills: “conduct activities in English, to make a week of communication only in English “,” to invite native speakers to communicate with students “,” to add interesting ways of studying “,” to conduct excursions “,” to show videos from the countries whose language we study “; “Allocate more hours for the subject of local lore” - 5.7%; 8.1% of students answered in general phrases: “Tell more about what will affect socio-cultural competence” and so on. The answers of about 6.4% of respondents were creative: “increase the interaction of students with representatives of another country, native speakers, travel with the support of the college to the countries whose languages are studied.” And 12.5% of respondents see a change in the style of communication between teachers and students as a condition for increasing the effectiveness of the formation of socio-cultural competence of the future foreign language teacher in the college. In their questionnaires, these students state categorically: “Change the approach to the organization of the learning process. Listen to the students”.

Regarding the answer to the fifth question of the questionnaire, the students’ answers were divided as follows: 34.6% of respondents believe that classroom classes contribute to the most effective formation of socio-cultural competence of the future teacher. The main argument of most students was that in class the teacher will explain everything that the student needs. 25.4% of students said that this is extracurricular work, because classes, in their opinion, should be held not only in classrooms and according to the traditional program. 21.8% of respondents chose independent work and emphasized that the main issue in the formation of socio-cultural competence is self-improvement and self-development of man himself, because in their absence other forms of work will be either ineffective or ineffective. 14.7% of respondents chose both extracurricular and extracurricular work. Another 3.5% of students, in our opinion, avoided answering for an unknown reason, writing: “socio-cultural competence should be formed in a complex.”

In order to more effectively plan the work during the formative experiment, a survey of foreign language teachers (English) of pedagogical colleges was conducted. A total of

38 teachers took part in the survey.

*The first question.* 61.5% of teachers said that the formation of socio-cultural competence of future foreign language teachers is very important and 38.5% - important. Option c) “not very important” and d) “unimportant” was not chosen by any teacher.

*The second question.* Teachers noted among the subjects that have the greatest potential in the formation of socio-cultural competence of the future teacher of a foreign language, the history of English-speaking countries, geography, lexicology, stylistics, culturology, sociology, subjects of philology.

In response to the third question: “Do you consider it sufficient to form socio-cultural competence within the college program while studying as a future foreign language teacher?” the vast majority of teachers (76.3%) said that it is sufficient, but it is worth more hours and attention to the disciplines of linguistics. 15.6% of teachers noted that the formation of socio-cultural competence of future foreign language teachers depends not only on the program material, but also on the personality of the teacher and his pedagogical skills. We completely agree with this answer. And another 8.1% of respondents said that the program of socio-cultural competence is considered insufficient, because for the effectiveness of this process students need to be able to communicate with native speakers, visit English-speaking countries, listen to webinars.

In the formation of socio-cultural competence (answer to the fourth question of the questionnaire), college teachers use mostly electronic textbooks, videos from British Council, Youtube, authentic texts, videos, newspaper articles, aphorisms, proverbs, sayings and more. Observations of the work in the classroom confirmed these answers.

With sociocultural texts, teachers orient students to the following work: to find cultural and regional information in the texts, to systematize it, to compare it with the phenomena of native culture, to master typical forms and formulas of speech etiquette, rules and norms of communication, to use linguistics and linguistics own reflections on the basis of read text, discussions, reading, translation and analysis of language phenomena, listening to texts and checking comprehension of heard, written reproduction of listened to text, selective reading, composing dialogues, creative tasks to find additional information, stylistic analysis of the text, main idea, feelings of the author, video analysis, etc.

In response to the sixth question of the questionnaire, teachers noted that to form the socio-cultural competence of future foreign language teachers use the project method, search method, role-playing games, presentations, conversations, creative exercises, learning and acting dialogues and polylogues, creating speech situations, interactive methods. creation of situational interaction, preparation of reports on the country and culture of the studied language, dramatization of dialogues, writing letters to a foreign friend, involvement of students in extracurricular educational activities.

Diagnosis of socio-cultural competence, as evidenced by the answer to the seventh question of the questionnaire, teachers usually conduct indirectly through observation, interviews, questionnaires, translation with creative assignments, works on a given topic, essay writing, reading comprehension and reading comprehension, listening, roleplaying



games, writing letters, analyzing students' written and oral answers. Also in answering this question, college teachers noted that, unfortunately, today there are no tools to determine the dynamics of socio-cultural competence as a separate personal integrity.

Teachers see ways to increase the effectiveness of the formation of socio-cultural competence of future foreign language teachers in the college: attracting foreign teachers from English-speaking countries to conduct trainings and seminars for students; provision of modern literature, video and audio recordings; conducting classes with increased socio-cultural color; promoting civic competence during debates; review of traditional roles of teachers and students during the educational process, involvement of students in cooperation; use of socio-cultural components as a mandatory factor during classes; introduction of a special course on the formation of socio-cultural competence; reorientation of foreign language teaching from informative to problem-oriented; availability of technology for the formation of socio-cultural competence.

**Conclusions.** Thus, despite the fact that college teachers carry out quite serious work in foreign language classes using authentic texts, audio and video materials, various modern teaching methods, the survey of graduate students showed a lack of socio-cultural competence in accordance with modern social requirements for the individual teacher. As noted by teachers in individual interviews, the explanation for this contradiction may be the lack of appropriate technology for the formation of socio-cultural competence of future foreign language teachers.

Thus, the study showed the insufficient level of socio-cultural competence of future foreign language teachers and confirmed the need to develop and implement in the educational process of pedagogical colleges pedagogical conditions and structural and functional model of socio-cultural competence of students.

#### References:

1. Almazova N. Y. Formation of intercultural competence when teaching a foreign language at the economic university [Internet access]: [elibrary.unecon.ru/materials\\_files/izv/IzvSPbUEF2003\\_3\\_C132\\_143\\_s.pdf](http://elibrary.unecon.ru/materials_files/izv/IzvSPbUEF2003_3_C132_143_s.pdf)
2. Barkasi V. V. (2004) Formation of professional competence of future teachers of foreign languages: abstract of Ph.D. dissertation. Specialization. 13.00.04 theory and methodology of professional education / V. V. Barkasi. Odesa, 2004. 21 p.
3. Kylyvnyk V. V. (2018) Diagnosis of knowledge about the sociocultural competence of future foreign language teachers in the professional training system. *Visnyk Chernihivskoho National Pedagogical University named after T. H. Shevchenko: v. 2-kh t. T. 1 / Chief editor M.O.Nosko. Chernihiv: ChNPU, 2018. Vyp. 151. P. 188–191.*
4. Kylyvnyk V. V. (2019) Results of implementation of the model of formation of socio-cultural competence of foreign language teachers. *Science, Research, Development # 15. Pedagogy. Warszawa, 2019. P. 20–27.*
5. Bobal N. R. (2013) Formation of socio-cultural competence of future journalists in the process of professional preparation. Abstracts of the dissertation. 13.00.04 / Nataliia Robertivna Bobal. Vinnytsia. 2013. – 20 p.

6. Bobyenko O. M. (2005) Key competencies of the individual as an educational result of the vocational education system: dys. ... kand. ped. nauk / O. M. Bobyenko / Kazanskyi hos. tekhnol. unyversytet. Kazan. 2005. 186 p.

7. Hura O. I. (2008) Theoretical and methodological foundations of the formation of psychological and pedagogical competence of a teacher of a higher educational institution under the conditions of a magistrate: dys. ped. nauk: 13.00.04 / Hura Oleksandr Ivanovych. Kyiv, 2008. 546 p.

## VALUE-MOTIVATIVE SELF-ASSIGNMENT OF MORAL AND LEGAL NORMS IN CHILDREN

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**Annotation.** *The article deals with the prospects of forming a value attitude to moral and legal norms in children based on a survey of their parents and teachers. It is noted that receiving information from an adult about human rights, the child begins to relate them to moral values. Gradually, the moral and legal ideas that are formed in the child, form a personal system of legal ideals and beliefs, on the basis of which she will later be able to assess legal information, forming its own sensitivity to the assimilation of legal norms. In particular, the child first learns the moral norms on the basis of which he is able to evaluate actions for morality or immorality (“what is good and what is bad”, “what can be done and what should be avoided”).*

*In this way, the child in his behavior is adjusted to actions in accordance with the norms of morality. Gradually, it becomes available to understand the child that people are punished for certain antisocial, illegal acts (sometimes children are afraid that they will be taken to the police), according to state laws, awareness of the existence and functioning of institutions with punitive powers.*

*In the future, adults should form children’s ideas about human offenses in terms of their legal behavior or vice versa - immorality and inadmissibility of certain actions and deeds, as well as acts contrary to the principles of law already known to children and violate the rights of others. The result of this process is the child’s awareness of the injustice of the offense and the differentiation of its legal and moral ideas, which allows you to assess the behavior of yourself and others from the standpoint of justice-injustice with the legitimacy of priority and significance. In this approach, the moral assessment of fair behavior is perceived by the child as secondary.*

**Keywords:** *rights, moral and legal education, sensitivity of formation of value attitude to moral and legal norms in children, parents, teachers.*

**Introduction.** One of the leading conceptual ideas of the XXI century is the legal education of man, which has become widespread in the world community, and has led to the task of educating a new type of young generation who knows their rights, knows how to defend them and respect the rights of others.

In the context of the human-centric paradigm (V. Kremen) one of the leading principles of modern educational policy is its humanistic orientation, which determines the priority of universal values in the educational process, as well as creating effective

conditions for educating children and youth in the legal field with conscious morality and law. and activity imitation of spiritual and legal values, a clear civic position, a sense of responsibility for the fate of the state, high moral qualities. In this regard, the legal education of children at the stages of preschool and primary school age is especially important, when the foundation of citizenship, morality, legal education is laid, the effectiveness of which determines the effectiveness of the process of becoming a responsible citizen. The expediency of early acquaintance of children with moral and legal norms is explained by their sensitivity to the formation of values in relation to moral and legal phenomena, assessment of moral and legal situations, development of skills and formation of readiness for lawful behavior.

A significant amount of research on this problem (V. Dubrovsky, G. Davydov, V. Kvasov, I. Kotyuk, V. Orzhekhovskaya, M. Podberezsky, O. Pometun, T. Remekh, L. Tverdokhlib, N. Tkachova, M. Fitsula, M. Shcherban, etc.) testifies to the increased scientific interest in the search for effective means of legal education of the younger generation. However, the analysis suggests that the holistic characteristics of legal education as a component of personal and social development of preschool and primary school children has not been the subject of special study and today remains unresolved in theory and educational practice. teachers in the legal education of children [1-5].

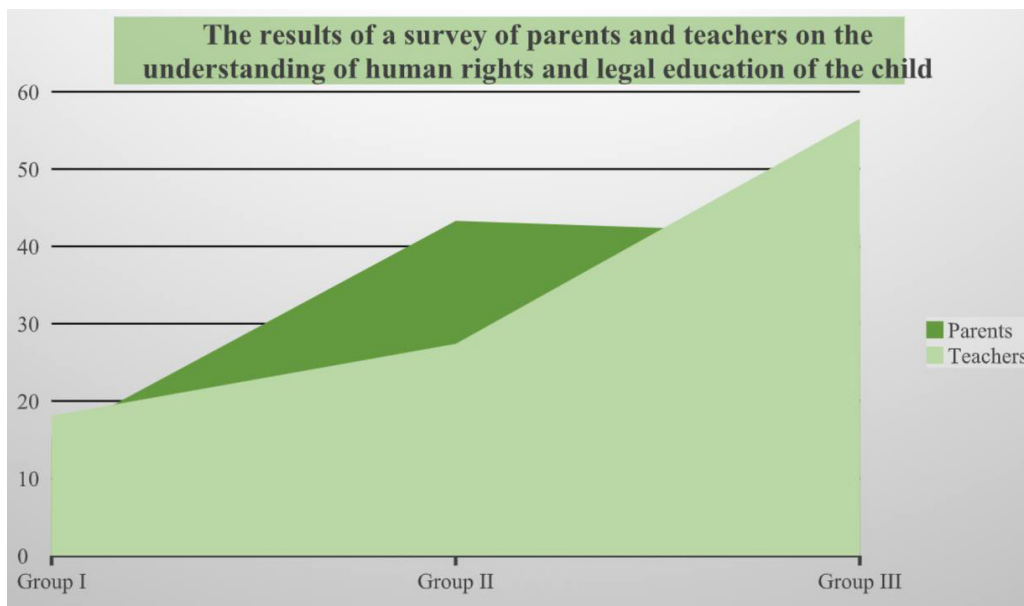
The purpose of the article is to form a value-motivational attitude to moral and legal norms in children. The main task of the study is to determine the main priorities in the work of parents and teachers to develop skills and develop readiness for lawful behavior in children.

Presenting main material. Based on the analysis of legal and modern psychological and pedagogical literature S. Fedotov defines the content of moral and legal education for preschool children as “organized, purposeful and systematic influence on the personality of the preschool child to form legal awareness, develop skills and habits of active lawful behavior. moral norms and rules. Among the effective pedagogical methods of moral and legal education of preschoolers, the researcher singles out: the child’s entry into the position of another child (the ability to “look at the world” through the eyes of this person), immersion of the child in a specific cognitive problem; use of a game character, “life stories” [2, 3, 5].

The formation of value-motivational attitude to moral and legal norms in children is defined by us as sensitivity to the formation of legal culture of the individual, based on his previous life experience and accumulated ideas and knowledge of social interaction, in resolving conflicts and differences of interest in the educational process and one’s own life [5, p. 65].

The ability to evaluate objects, ie to establish their value, is associated with the formation in the human mind of values. This raises the problem of a culture of choice of values that presupposes freedom. The choice is based on reason, is realized through activities that overcome necessity and develop on its basis. It is always extremely difficult for a person, especially a young person, to make a choice. After all, this is a responsibility. All human actions are imbued with choice. The choice begins in childhood and lasts a lifetime.

In order to study the attitude of parents to the issues of legal education of children and to identify their awareness in this area, a survey of parents of children 6-7 years and their teachers was conducted, which was attended by 200 respondents (Fig. 1). In order to conduct a survey of parents, a questionnaire was developed and proposed to representatives of senior preschoolers and first-graders. Here is a detailed description of the answers of parents of children of both ages to the questionnaire. To the first question of the questionnaire: “Are you familiar with the provisions of the UN Convention on the Rights of the Child? What do you know about this document? only 15.6% of respondents gave an affirmative answer; the vast majority of parents are not familiar with the provisions of the UN Convention on the Rights of the Child and 45.5% know about it only that it states the rights of the child.



**Fig. 1. The results of the survey of parents of children 6-7 years and their teachers**

Answers to the second question of the questionnaire “Are you familiar with the Family Code of Ukraine, with the rights and responsibilities that you have as a parent according to this document?” 35.5% of parents reported that the Family Code existed, but only 25.1% of respondents were able to name their rights and responsibilities.

Revealing their understanding of children’s rights (answer to the third question), parents gave the following answers: these are state-guaranteed opportunities and freedoms (25.2%); legally enshrined opportunities to live properly (18.3%); the right to education, work, leisure, freedom of speech (62.1%); the rest of the parents did not answer this question.

To the question “What rights does your child have?” 45.5% of respondents answered that their child “has all the rights of a child of this age”; 52.1% listed them: the right to material support, to visit a preschool institution (school), the right to have friends, own interests, etc.

Regarding the responsibilities of the child, the parents indicated the following: “helps me with the housework, cleans their toys (things), takes out the garbage, waters the flowers, washes the dishes” – 75.2% of respondents; “Respect senior family members” – 13.2% of parents; “Follow the rules of conduct, obey parents” – 23.1%. Regarding the responsibilities of the child, the parents indicated the following: “helps me with the housework, cleans their toys (things), takes out the garbage, waters the flowers, washes the dishes” – 75.2% of respondents; “Respect senior family members” – 13.2% of parents; “Follow the rules of conduct, obey parents” – 23.1%.

Answering the sixth question of the questionnaire, 33.2% of parents believe that children should be informed about their rights, “because it is easier for smart people to live”, “so that they can respect themselves and other people”; “So that they can protect their interests” – 28.1%; the rest believe that it is too early to introduce children to their rights at this age.

Answers to the seventh question “Do you think that you violate the rights of a child when you leave him at home alone for a few hours?” show that only a third of parents (34.1%) understand that when they leave their children alone at home, they violate their rights. The rest of the parents (65.9%) do not think so: “let him grow up on his own”, “let him get used to it, because it doesn’t work out otherwise”.

The answers to the eighth question showed that the vast majority of parents do not consider it a violation of the child’s rights if punishing for something, putting the child in a corner or otherwise restricting his freedom of movement, obviously not realizing that this is an important basic need.

Analysis of the answers to the ninth question shows that 73.1% of parents understand that the humiliation of the child’s dignity can further lead to serious psychological trauma, behavioral disorders. Among the consequences, they called: “child insecurity”, “inferiority complex”, “low self-esteem”, “failure, helplessness in adulthood”; 18.9% of respondents believe that “a child will grow up closed or aggressive”, or “this can lead to hostility towards parents, loss of trust.”

Parents know that hitting a child means violating their rights, while 69.5% of respondents use corporal punishment, among which preference is given to slaps, children are slapped, beaten; 31.1% consider such punishment permissible in some cases. Only 10.1% of parents pointed out the categorical inadmissibility of corporal punishment in any situation. Among the reasons that motivate parents to use punishment are the following: “the child does not listen” (27.1%); “My parents beat me too” (26.4%); “Can not stand the nerves” (16.3%); “Arguments and patience are running out” (9.2%); “Psychological stress after work” (6.1%); “Violation of the rules of conduct” (5.3%); “Stubbornness of the child” (4.1%); “Deliberately defies parents” (3.2%).

To the question “Do you consider your knowledge of legal education of a child

sufficient?” the vast majority of parents (83.1%) said they would like to know more about children’s rights, but at the same time indicated a lack of free time; only 9.1% of parents gave an affirmative answer and gave a positive assessment of their knowledge and skills in the legal field.

Answering the last question “Are you satisfied with the interaction of the educational institution and the family on the legal upbringing of children?” 57.5% of parents said they would like to improve such interaction, including in order to improve their knowledge of legal education of children. That is why the results of the survey of parents of children aged 6-7 allowed to divide all parents into three groups based on the level of their understanding of human rights and in particular the legal upbringing of the child, as well as awareness of the importance of legal upbringing of the child.

*The first group of parents* (15.2%) have sufficient knowledge and skills in the field of law and legal education of children, respect the rights of the child, teach him to perform his duties, prefer explanations and encouragement rather than punishment, teach the child is responsible for their desires and actions, have a positive response to cooperation with teachers on this issue.

*The second group of parents* (42.3%) have insufficient knowledge and skills in legal education of children, so do not always respect the rights of the child and do not teach him to perform their duties, consider permissible corporal punishment in some cases, pay insufficient attention to teaching children to understand consequences of their negative behavior, but are willing to interact with teachers.

*The third group of parents* (41.5%), although they consider the process of legal education of children important, do not have the necessary knowledge and skills about the rights and legal education of children, are convinced that children of this age are too young to perform responsibilities and be aware of their actions. and therefore do not see the need to organize interaction with the teacher in this direction.

Further relevant for the study was to determine the level of legal knowledge of educators and teachers, their theoretical and practical readiness to carry out work on the legal education of children. Let’s analyze the results of teachers’ answers to the proposed questions of the questionnaire (Fig. 1). Yes, to the first question of the questionnaire: “What documents protecting the rights of the child are you familiar with?” the vast majority of teachers (90%) limited themselves to the Constitution of Ukraine and only 8% called the “UN Convention on the Rights of the Child”; 2% of teachers are familiar with the Laws of Ukraine “On Education”, “On Preschool Education”.

Answers to the second question of the questionnaire: “Assess how well you know the legal documents on the legal protection of children: a – good; b –satisfactory, c – unsatisfactory “showed that 70% of teachers assess their knowledge as” satisfactory “, 20% –” unsatisfactory “, 10% –” good “.

The next question of the questionnaire: “In your opinion, do children have special rights that they should know about? Name them? ” allowed to record the affirmative answers of most teachers. Among the rights of children, they named the following: “right to life” (90%), “right to education” (80%), “right to treatment” (60%), “right to food”

(30%), love and respect of parents “(20%),” safe childhood “(5%),” comfortable living conditions “(4%),” freedom “(3%),” play “(3%),” right choice “(2%),” the right to one’s own opinion “(1%).

Answers to the fourth question of the questionnaire “In your opinion, why introduce children to their rights?” found that it is necessary to acquaint children with their rights so that “they can protect themselves in the future”, “so that they are not deceived in life”, “so that children know that they have the right to live in a state governed by the rule of law”, “to live in society” , communication with peers “,” so that children know that they have rights at their age “,” so that children know what responsibilities they have to perform “,” so that children can stand up for themselves in society “,” so that they are aware , to which they are entitled. At the same time, 10% of respondents did not answer this question.

Processing of respondents’ answers to the next question of the questionnaire “In your opinion, at what age should children be introduced to human rights? Explain why you think so? ” showed that their opinions were divided as follows: 20% of teachers believe that it is necessary to start introducing children’s rights from the age of three, because “children are more cohesive, understand the words of adults”; 50% say that from the age of four, because “the child is already meaningful about what he is asked”, from the age of five, because “a five-year-old child has his own opinion and can defend it”; 20% believe that from 6-7 years, because “the child goes to school and enters adulthood.”

To the question “Do you acquaint children in preschool (school) with their rights? With which?” only 30% of respondents answered in the affirmative. Among the rights that children are introduced to, teachers named the following: “the right to education, freedom, the right to choose”, “the right to life, education, treatment”, “the right to education, play, life, medical care”. The rest – 70% abstained.

The majority of teachers (80%) answered in the affirmative to the question “Do you acquaint children in preschool (school) with their responsibilities? With which?”. Among the responsibilities for preschoolers were: “clean toys, take care of their belongings”, “help parents”, “take care of yourself, clean up after yourself”, “fold your clothes, water the flowers”, “help adults, keep clean rooms “,” responsibly treat the instructions of elders “; students should “study honestly, do homework”, “follow the teacher’s instructions”, “do not be late for school, come on time”, “participate in cleaning the classroom.” At the same time, 20% of respondents refrained from answering this question.

Respondents understand the concept of “legal education of children” as follows: 35% believe that it is “a process of acquainting children with their rights and responsibilities”, “a process of raising children aimed at explaining their rights”; 9% of respondents stated that it is “a process of acquainting children with their rights and fostering respect for their own rights and the rights of others, as well as law-abiding behavior.” The rest of the respondents - 51% abstained from the answer.

All respondents (100%) are convinced that children aged 6-7 can be led to understand the concepts of “right”, “freedom”, “law”, “equality”, “duty”, understandably in a form accessible to children.



Among the methods and techniques for acquainting children with their rights, teachers use the following: “conversations”, “reading fiction”, “illustrations”, “didactic games”, “viewing posters”, “example of others or your own”, “story”, “story”, “ fairy tales and stories “,” story-based role-playing games “.

The most difficult question for educators was the questionnaire on the effective conditions of legal education of children 6-7 years. Teachers called only “teacher competence”, “environment”, “pedagogical experience”.

The tasks facing teachers of legal education of children, 20% of respondents identified the following: “to acquaint children with basic knowledge of law and educate knowledgeable and well-developed children”, “to acquaint children with rights, teach them to use them correctly, summarize learned rights”, “To educate a citizen of their country, a patriot”, “to acquaint children with their rights and responsibilities”. The rest of the teachers limited themselves to the general tasks of “education, development and training of children.”

To the question “What do you think is the best way to start introducing children’s rights?” respondents answered “from the story of human rights”, “from the explanation of the essence of the concept of” law “.

When analyzing the answers of teachers to the next question of the questionnaire: “What kind of work with parents on legal education of children do you do?” found that teachers conduct “consultations”, “conversations”, “parent meetings”.

Among the difficulties experienced by teachers in the process of legal education of children, they noted “their own incompetence in legal matters”, “lack of material that can be used to work with children”, “the complexity of the material for children to learn.”

All teachers (100%) expressed a desire to increase their knowledge of children’s rights and legal education of children.

According to the answers of the survey of parents and teachers, the “Field of values” of the preschooler was formed in the structure of the Basic educational component. According to the qualities defined in the Basic Component, the following are noted: independence, diligence, humanity, observation, responsibility, justice, self-control, self-love, creativity, etc. It is also possible to distinguish the following terminal and instrumental values (Table 2).

Thus, the Basic educational component of legal education of children highlights such important basic personality traits as: independence, diligence, humanity, observation, responsibility, justice, self-control, selfishness, creativity, which must be nurtured in the modern preschooler in the first place. These personality qualities, which are so necessary for the education of morality in preschoolers, cultivating attachment to the immediate environment, the development of emotional and sensory sphere and instilling common norms of social behavior meet the objectives of our study.

A survey conducted among educators and teachers of first grades of primary schools on their awareness of the nature and features of legal education of children 6-7 years old concluded that the vast majority of teachers need to improve their legal skills and methodological developments to purposefully organize the process of legal education of

Table 2

**Terminal and instrumental values of self-assessment of moral and legal norms in children**

Value orientations of senior preschoolers	Basic educational component	Subject-content and activity realization of education
1	2	3
<b>Термінальні цінності</b>		
<b>Friendship</b>	The child in society	Children, group, social and communicative competence
<b>Family</b>	The child in society	Child's game. Family, family, family competence Formation of personality in the game. Game competence.
<b>Happiness</b>	The child's personality. Child's game. The child in society	Health and physical development, personal competence. Formation of personality in the game, game competence.
<b>Confidence</b>	The child's personality. The child in society.	Child's game. Self-assessment, self-awareness, personal and evaluative competence. Family, family and household competence, people, adults, children, group, social and communicative competence. Formation of personality in the game, game competence.
<b>Purposefulness</b>	Child's game. The child's speech	Personality formation in game, game competence. Coherent speech, dialogic speech, dialogic competence, monological competence, speech competence, communicative competence
<b>Courage</b>	Child's game. The child's personality. The child in	Self-assessment, self-awareness, personal assessment competence. Family, family, family

	The child in society	Family, family, family household competence, people adults, children, group, social communicative competence. Personality formation in game, game competence
<b>Curiosity</b>	The child's personality. A child in the world of culture. The child in the sensory - cognitive space	Self-assessment, self-awareness, personal and evaluative competence. Subject-practical activity, world of art, perception of art, artistic-productive competence. Cognitive activity, sensory-cognitive competence
<b>Persistence</b>	The child's personality. The child in society	Self-assessment, self-awareness, personal and evaluative competence. Child's game. Family, family, family competence, people, adults, children, group, social and communicative competence. Formation of personality in the game, game competence
<b>Empathy</b>	The child in society. Child's game	Family, family household competence, people, adults, children, group, social communicative competence. Personality formation in game, game competence.
<b>Instrumental values</b>		
<b>1</b>	<b>2</b>	<b>3</b> <input type="checkbox"/>
<b>Independence</b>	The child's personality. The child in society. A child in the world of culture. Child's game	Self-awareness, personal and evaluative competence. Family, family, family competence, people, adults, children, group, social and communicative competence. Subject-practical activity, artistic-productive activity, artistic-productive competence. Formation of personality in the game, game competence

<b>Confidence</b>	The child's personality. The child in society. Child's game	Self-assessment, self-awareness, personal and evaluative competence. Family, family and household competence, people, adults, children, group, social and communicative competence. Formation of personality in the game, game competence
<b>Purposefulness</b>	Child's play. The child's speech	Formation of personality in the game, game competence. Coherent speech, dialogic speech, dialogic competence, monologue competence, speech competence, communicative competence
<b>Courage</b>	Child's personality. The child in society. Child's game.	Self-assessment, self-awareness, personal and evaluative competence. Family, family, family and household competence, adults, children, group, social and communicative competence. Formation of personality in the game, game competence
<b>Curiosity</b>	A child in the world of culture. The child in the sensory-cognitive space	Self-assessment, self-awareness, personal and evaluative competence. Subject-practical activity, world of art, perception of art, artistic-productive competence. Cognitive activity, sensory-cognitive competence
<b>Perseverance</b>	The child's personality. The child in society	Self-assessment, self-awareness, personal and evaluative competence. Child's game. Family, family, family competence, people, adults, children, group, social and communicative competence. Formation of personality in the game, game competence

<p><b>Empathy Child in society</b></p>	<p><b>Child in society. Child's game</b></p>	<p>Family, family competence, people, adults, children, group, social and communicative competence. Formation of personality in the game, game competence</p>
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children and providing effective conditions for the organization of constructive interaction of the educational institution with the families of pupils.

**Conclusions.** Thus, the main condition for ensuring the legal education of children is the orientation of the pedagogical process of preschool and primary schools on a common and unique goal - education of preschoolers and primary school children on the basis of respect for human rights and responsibilities through forming a sense of dignity, justice and freedom. , equality, as well as education of respect for the honor and dignity of others, attitude to law and legal law as values, transformation of legal knowledge to the level of personal beliefs, the formation of skills of lawful behavior. In order to ensure real continuity and perspective in the legal education of children aged 6-7, it is important that the cooperation between preschool and primary education is long-term and inseparable; work of educators and teachers - systematic and planned; tasks of legal education of children - complex and integrated.

It is to ensure the relationship between legal and moral education based on the emotional sphere and practical activities of students involves the implementation of moral and legal education as a holistic pedagogical process of organizing children's lives: activities, relationships, communication based on their age and individual characteristics in the transition from preschool to primary school age. This is due to the fact that the moral foundations of legal education are laid in the family environment, which initiates the process of forming moral incentives in the child and his understanding of good and bad, allowed and forbidden in behavior. The child begins to realize his rights and responsibilities as a full member of the family through the idea of what is "good" and "bad", "possible" and "impossible", "want" and "should", "right" and "wrong".

Among the factors that determine the formation of the legal picture of the child's world play a significant role in social role models, which are set by adults through various activities and serve as regulators of the child's behavior outside. Social standards perform the functions of socially sanctioned guidelines for behavior, form in the child certain guidelines, positions, attitudes. Assessing the moral situation, the senior preschooler focuses not only on the requirements of adults, but also on their ideas, which are formed as ethical standards, as emotional and cognitive generalizations about behavior. These standards, on the one hand, reflect a certain area of the child's life, and on the other - contain social evaluation and emotional attitude. Note that to regulate the child's behavior, the standards that are set externally, must be assigned to the child, resulting in the formation of standards-samples as internal regulators of behavior.

**References:**

1. Birch S.V. (2009) Legal education as a prerequisite for the formation of legal culture in a modern democratic society. *Journal of Kyiv University of Law*. 2009. № 3. S. 19-25.
2. Bekh I.D. (2015) Conceptual model of self-centeredness in education and spiritual development of personality. *Pedagogy and psychology*. № 3. (88). 2015. S. 5–16.
3. Bilan O.I. (2017) Program for the development of preschool children “Ukrainian preschool” / For general. ed. OV Nizkovskaya. Ternopil: Mandrivets, 2017. 256 p.
4. Bilan O.I. (2017) Program of preschool child development “Ukrainian preschool” / For general. ed. OV Nizkovskaya. Ternopil: Mandrivets, 2017. 256 p.
5. Zadorozhna G.S. (2018) Civic socialization and legal education of preschoolers and junior high school students on the basis of continuity. *Science and Education a New Dimension Pedagogy and Psychology*. 2018. VI. (64), Iss. 154. P. 64–67.

## METHOD OF THE ASSESSMENT OF THE PROFESSIONAL COMPETENCE FORMATION

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**Annotation.** *The article deals with the peculiarities of the assessment of the level of professional competence formation in future specialists. Scientific studies, dealing with the problem of competence assessment in higher education institutions are analyzed. The technique of complex assessment of their professional competence by means of testing the formation of its components (cognitive, activity, motivational and reflexive), individual evaluation by the teacher of the work of students in the process of learning and using the algorithms of fuzzy logic is offered.*

**Keywords:** *training of specialists, institutions of higher education, professional competence, levels of professional competence, assessment of the competence, methodological support of the discipline.*

**Introduction.** Modern trends, aimed at the improvement of higher education in Ukraine, approaching its standards to the European ones, require efficient scientific and practical search of the ways, aimed at improvement of pedagogical technologies, assessment of knowledge and skills, formation of professional competence, etc. Therefore, the competency approach, actively implemented in higher education institutions in the process of training specialists, is based on interdisciplinary, integrated requirements to the result of educational activity – the formation of general and professional competence of the graduate. Thus, the organization of the educational process in higher education institutions based on the competency – based approach involves not only the development of new higher education standards, but also a fundamental change of approaches to the assessment of educational performance.

In accordance with the already approved higher education standards in Ukraine, the result of specialists training in higher education institutions is the formation of an integrated professional competence on the appropriate level, as a result of the interaction

tion of competences, formed in students in the process of studying vocational-oriented disciplines, which are provided in the curriculum. The work programs of the disciplines describe the content and structure of competences that should be formed as a result of studying these disciplines. However, the analysis of the work programs for training specialists in higher education institutions of different fields of study showed that in the end the students' knowledge, skills and abilities are evaluated, not competence. Accordingly, the criteria for assessing students' knowledge in the process of vocational training are focused specifically on determining the level of knowledge and skills of students and provide opportunities to determine the level of competence. This caused the necessity to develop a procedure for the diagnosis of the professional competence.

**Analysis of the methods of the assessment of professional competence formation.**

A comprehensive analysis of the scientific and pedagogical literature and practice of implementing the requirements of the competence approach in higher education institutions in the process of professional training showed that there are practically no standardized diagnostic methods and procedure for determining the levels of formation of both professional competence in general and individual competencies in the study of professional – oriented discipline. In scientific publications, the following hierarchy of competencies is most common: key, general, special, etc. [1]. The content of these competences is described by the standards of higher education of Ukraine, and the formation process takes place during the study of the educational disciplines, envisaged by the educational and working curricula for training specialists in certain specialties.

Scientific publications contain various suggestions regarding the competences assessment. In particular, the team of authors composed of V. Karpenko, I. Mostov'yak, T. Pushkaryova-Bezdil proposes to assess the competence by conducting tests, interviews, group discussions, individual evaluation, etc. [2, p. 35]. The effectiveness of this approach, according to the authors, is that it creates opportunities to comprehensively evaluate the changes that have occurred in the conscious and level of competence of each student in the process of studying of each discipline. Its significant disadvantage is the amount of time spent for determining the level of the corresponding competence formation. After all, if the curriculum as a control measure provides only a credit of one academic hour for a group of 25-30 students, then the teacher is physically unable to implement such a procedure of competency assessment.

A great number of the researchers use the following algorithm for competence assessment: criteria development – justification of indicators – development of a test methodology of competence assessment (either as a whole or by its separate components) – analysis of test results in accordance with the developed scale.

However, in our opinion, the disadvantages of this approach are:

1) the development of diagnostic tools using such an algorithm is a rather complicated procedure and requires separate scientific research;

2) students, answering the questions of the test, at their own discretion assess their skills and abilities, the adequacy of their answers depends on the personal development of the reflective sphere.



Developing a mechanism for the assessment of each competence, first of all, it is necessary to determine their common traits, because any competence consists of cognitive, activity (technological), motivational and reflective structural components.

The cognitive component involves the formation of the system of knowledge in the corresponding subject, mastering of the basic laws, rules, standards, regulations and principles that are provided in the work program. In general, it is a system of relevant knowledge that students in a particular subject must acquire to fulfill their professional responsibilities in the future.

Activity or technological level is the level of the formation of necessary skills, provided by a training program. In future, on the base of this component of competence the ability to effectively solve task-oriented problems in the course of professional activity is formed. The formation of this component occurs by means of interaction with the teacher, team, sources of information, etc.

The motivational component involves provision of the positive motivation to study each discipline. The motivation for future professional growth of the students should be developed by creating in the educational environment of higher education institutions the conditions for their quasi-professional activities (specialized lecture-rooms and laboratories, research structures etc.). In this context, we agree with the opinion of O. Leontiev, who believes that it is due to motivation that certain activity for the individual acquires personal meaning, generates a lasting interest to it, transforms the externally set goal into the internal needs of the individual [3, p. 100].

The development of the reflective component in the competence structure enables the future specialist to evaluate adequately their actions, draw appropriate conclusions, and adjust further plans. In the study of A. Bizayev the reflection is considered as a professionally important quality of the personality, which is the basis for the formation of social-perceptual and communicative abilities of the employee and determines the level of his professional identity [4].

Such structure of the competence is a benchmark for teachers who specify the content of each component according to the characteristic features of the subject and on this basis determine the levels and indices that indicate the competence has been formed. When the criteria for each competence component have been substantiated, a methodology for their definition should be developed. The application of test methods is attracted by the possibility of rapid determination of the levels of knowledge, skills and abilities of future professionals. Therefore, they have become widespread and relevant in higher education institutions as a result of reduction of the in-class hours for the subject study. It is expedient to evaluate the cognitive (knowledge) and activity (skills) components of the professional competence using test methods. At the same time, it is possible to determine the level of knowledge, skills and abilities of future specialists, using information technologies and test programs completely automate the process, significantly reducing the inefficient time expenditures for the processing of the evaluation results.

The motivational and reflective components of competency should be assessed

by means of comprehensive technique, using appropriate tests that allow prospective professionals to self-assess according to these criteria, as well as by the results of their individual evaluation by teachers, taking into account the results of the work during the semester / academic year. Such comprehensive assessment helps to reduce the risk of over-self-esteem by those students who have low levels of reflexive component development.

Thus, in the course of studying the discipline for the students' assessment, each teacher conducts oral interviews, holds workshops (practical work), etc., during which he / she supervises the students' work: acquiring knowledge of theoretical material and ability to solve practically educational and quasi-professional tasks. In case of such individual assessment, the following should be taken into account:

- the level of command of intellectual operations (ability to analyze, synthesize, compare, generalize, summarize, draw conclusions);
- mode of the answer (elementary, fragmentary, incomplete, complete, logical, argumentative, substantiated, creative, using own experience);
- the ability to identify and solve problems, and to suggest hypotheses, regarding the possible ways of solving;
- the ability to express their own judgments.

**Materials and methods of the assessment of the professional competence formation in higher education institutions.** The significance of the problem of the professional competence formation assessment is determined by the large amount of scientific research in this area. In particular, A. Stymak stated that the problem of determining the level of competence is one of the most complex in the sphere of education at the present stage of higher education reforming and requires the development of effective mechanisms that would allow to assess the real level of students' competence [5, p. 110]. Modern methodological approaches to the formation of the professional competence of future specialists and its diagnostics are defined by A. Ligotsky and L. Romanyshina [6].

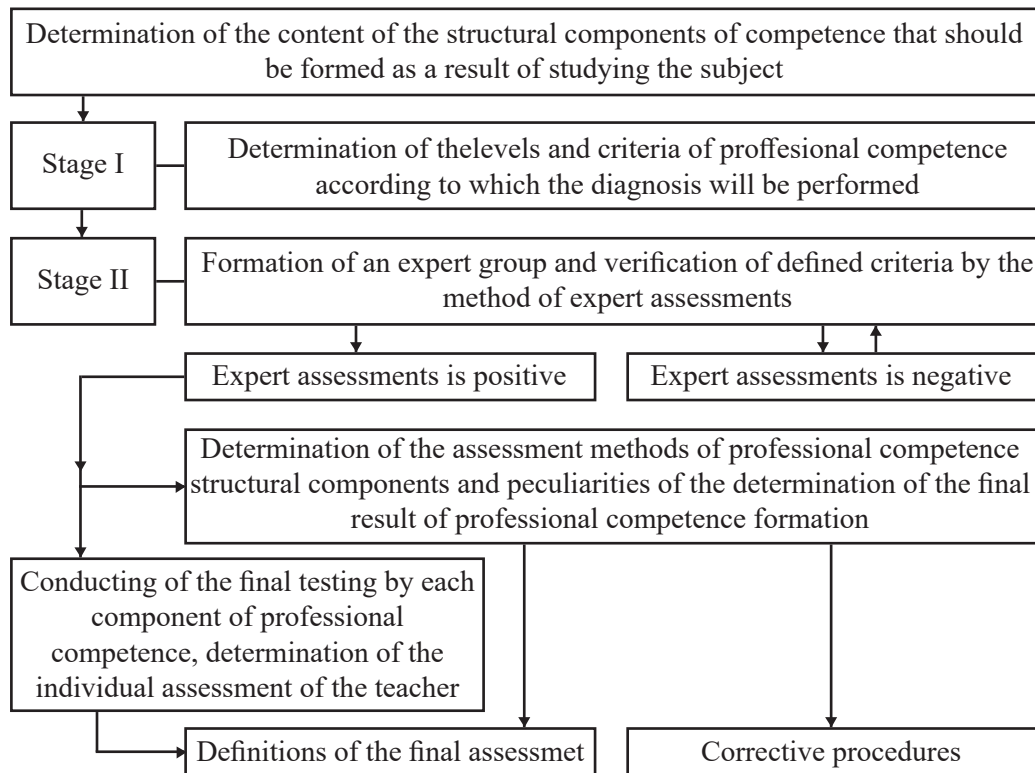
A. Dobrotvor believes that the content of the concept of "competence" implies a comprehensive assessment of this phenomenon, and the conventional test methods are focused only on determining the level of students' knowledge. In order to make a conclusion regarding the level of the development of future specialists' competence, it is necessary to confirm the obtained results of testing with the appropriate skills. Therefore, in addition to testing, teachers should analyze the quality of problem situations solution, the discussions' efficiency, record the real achievements of students in learning, etc. [7, p. 240]

I. Kozlovskaya substantiated and distinguished the main components of the professional competence of a specialist: motivational (presence of motivation to perform certain actions or mastering a certain discipline), cognitive (knowledge of means, methods, programs of actions, solution of social and professional problems, implementation of rules and norms of behavior); behavioral (experience of demonstrating competence in a variety of ordinary and emergency situations), axiological (personal importance of a particular object); emotional-regulatory (features of manifestations of reflection in behavior and

activity) [8, p. 7].

However, all the analyzed methods of assessing the level of professional competence of future professionals contain a common drawback – a certain bias in the process of self-assessment by means of testing. Therefore, in order to obtain more accurate end result in assessing their professional competence, it is expedient to apply fuzzy logic algorithms.

The possibility and expediency of such an approach is that in the context of incompleteness and inaccuracy of information, the construction of an accurate mathematical model and obtaining unambiguous results is problematic and controversial [9; 10, p. 45]. Thus, fuzzy modeling methods based on expert judgment and yielding results that are as close to reality as possible are considered to be most effective in this case. Procedures for the assessment the level of competence formation using fuzzy logic inference algorithms are described in [10]. The proposed procedure and method of diagnostics of subject competence is shown in Fig. 1.



**Fig. 1. Diagnostics stages of the subject competence in higher education institutions**

Results and discussion. Problems of the determination of the level and criteria of the competence formation are in the focus of the attention of domestic and foreign scientists.

Among the publications we would like to distinguish the works of E. Lugovskaya (criteria, indices, levels and techniques of diagnostics of the professional competence of the future builders are defined and characterized) [12]; S. Skvortsova and Yu. Vtornikova (the structure of the professional -communicative competence of the teacher is determined and the components of the professional-communicative competence of the elementary school teacher are specified) [13].

Among the foreign scholars, the issues of competency assessment were addressed by L. Bachman (who defined that the component structure of the communicative competence of a foreign language teacher consists of the so-called subcompetencies: language/linguistic, discursive, pragmatic, colloquial, socio-linguistic strategic and cognitive)[14]; P. Broadfoot (structure of the teacher's professional competence) [15]; D. McClelland (features of competence measurement); T. Hoffman (interpretation of professional competence that combines the views of American and European scholars); A. Roliak and O. Ogienko (definition of the components of the European teacher's professional competence: European identity, European knowledge, European multiculturalism, linguistic competence, European professionalism, European citizenship, measurement of European quality, European pedagogical mobility); W. Rothwell and J. Graber (features of the employee competence assessment).

Interesting in the context of our study are the work of the team of authors, who believe that the competence approach has a number of limitations and disadvantages and, first of all, it is the complexity of determining the level of competence, and, therefore, in the system of higher education it should be supplemented by a broader approach to the development and formation of human capabilities. This is confirmed by the experience of foreign colleagues. Besides, B. Figueroa-Rodríguez, B. Figueroa-Sandoval, K. A. Figueroa-Rodríguez substantiated that a competence-based education should be oriented towards the labor market, since it is the employers who determine the pattern of the future employee. Thus, as these scientists state, the criteria and the indices, as well as the mechanism of the professional competence assessment should be determined by the employer. We will demonstrate the technique of the assessment of the professional competence formation level applying the proposed algorithm on the example of Vinnitsa National Technical University. In a pedagogical experiment of the assessment of occupational competence level at three stages, 187 students from machine-building (106 persons) and economics (81 persons) specialties participated:

1. Initial determination of the occupational competence level of the second-year students using two methods: the test, which is currently the most common in higher education institutions and the author's one. Since students have not yet studied at the University the subjects of safety, and have only completed the course introduction into a professional field, it is expected that the occupational competence in the sphere of labour protection of many students will be at the initial level.

2. Students of the machine-building specialties, whose curriculum of vocational training contains the requirement that bachelor's qualification work must contain the sections on labour protection, participated in the pedagogical experiment on the formation

of occupational competence, applying the technique, developed by the authors for future specialists in machine-building specialties. Students of economic specialties studied the health and safety course, the fundamentals of labour protection and studied according to the traditional method.

3. The concluding determination of the level of the occupational competence formation of the third and fourth year students, by the results which a significant increase of the competence level is expected in the experimental groups of students of mechanical engineering specialties and, insignificant – in the control groups of students of economics.

The initial level of work competence of the second year students was determined by test and the author's technique. Initially, to determine the competence level tests with a uniform distribution of points for each level of professional competence formation were used (200 points were divided into 4 levels by 50 points). The test offers 50 questions to determine the level of occupational competence formation (maximum – 200 points), and according to the obtained points its levels are: initial, reproductive, sufficient and creative. Therefore, subdivision into subgroups depending on the points scored is as follows: initial level (0 – 40), reproductive level (41 – 120), sufficient level (121 – 160) and creative level (161 – 200).

In the subsequent the assessment of the level of occupational competence formation was performed, applying the author's technique by means of determining the levels of cognitive, activity (technological), motivational and reflective structural components, as well as taking into account the individual assessment of the teachers. The level of labour protection competence formation was determined using fuzzy logical inference algorithms, in this case, the Tsukamoto algorithm [9]. The results of the initial determination of labour protection competence levels are shown in Table 1.

Table 1

**Determination of the level of labour protection competence formation at the beginning of the experiment**

Groups	Levels of project readiness								Quantity of persons in the group
	Initial		Reproductive		Sufficient		Creative		
	to	%	to	%	to	%	to	%	
<i>Test technique</i>									
MS	88	83,0	16	15,1	2	1,9	0	0,0	106
ES	69	85,2	11	13,6	1	1,2	0	0,0	81
<i>Author's technique</i>									
MS	93	87,7	13	12,3	0	0,0	0	0,0	106
ES	73	90,1	8	9,9	0	0,0	0	0,0	81

Note: MS – students of mechanical engineering specialties, ES – students of economic specialties.

As we can see, the test technique for assessing the levels of labour protection competence gave better results than the author's technique. As a result of the test technique of assessment, a small number of persons with a sufficient level of the competence may be observed, although they have not yet studied security subjects and are not familiar

with the features of future professional activity.

At the end of the formation stage of the pedagogical experiment on the introduction of organizational and pedagogical conditions for the formation of the labour protection competence of future specialists in machine-building field, re-determination of the levels of the competence applying both methods was carried out. The results of the final determination of the levels of formation of the labour protection competence of the students of mechanical engineering and economic specialties are shown in Table 2.

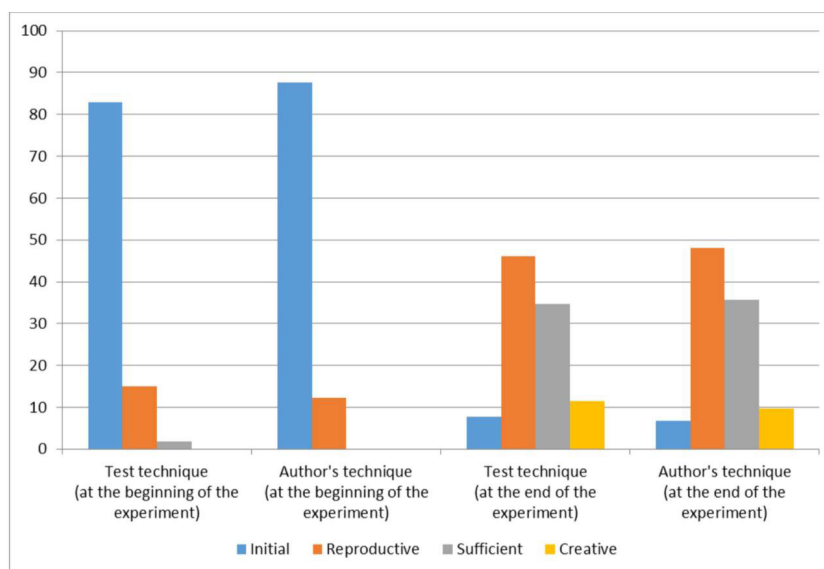
Table 2

**Determination of the level of labour protection competence formation at the end of the experiment**

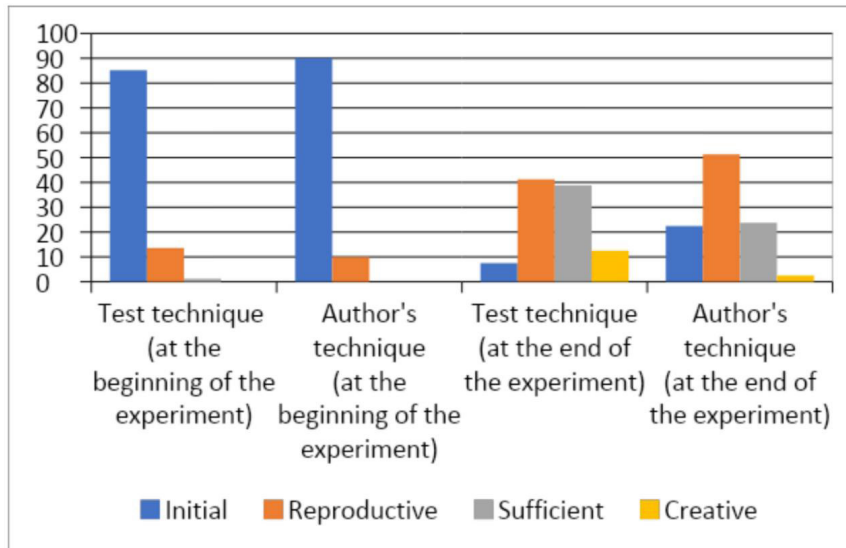
Groups	Levels of project readiness								Quantity of persons in the group
	Initial		Reproductive		Sufficient		Creative		
	to	%	to	%	to	%	to	%	
<i>Test technique</i>									
MS	8	7,7	48	46,2	36	34,6	12	11,5	104
ES	6	7,5	33	41,3	31	38,8	10	12,4	80
<i>Author's technique</i>									
MS	7	6,7	50	48,1	37	35,6	10	9,6	104
ES	18	22,4	41	51,3	19	23,8	2	2,5	80

Note: MS – students of mechanical engineering specialties, ES – students of economic specialties.

By the results of Table 2, we make a conclusion that the test technique gives somewhat over-estimate results. For visual clarity, the results of the pedagogical experiment are presented graphically in Fig. 2 and 3.



**Fig. 2. Determination of levels of the labour protection competence of students of mechanical engineering specialties**



**Fig. 3. Determination of levels of occupational competence of students of economic specialties**

In the experimental groups, which included students of mechanical engineering specialties, the expected increase in the level of the labour protection competence was observed, it was recorded by applying both methods to the evaluation of the experimental results. The results of the test and author's techniques differ within the margin of error. I regarding the students of economic specialties, the test technique demonstrates a much higher level of occupational competence formation than the author's one. In order to make sure in the over-estimate results of the test technique with the students who showed a sufficient and creative level of labour-safety competence, individual interviews were conducted. These interviews showed that they had a satisfactory level of theoretical knowledge but did not correspond to a sufficient or creative level of labour-safety competence.

**Conclusions.** Thus, the problem of assessing the level of professional competence is not only to evaluate the knowledge, skills and abilities, acquired by the student in the process of professional training, but also to identify what changes in the personality structure of the future specialist occurred. And using only test techniques of assessment does not allow to draw the reliable conclusions.

That is why, we consider expedient to analyze not only the results of the test assessment of all its components in the process of assessing the level of competence of future specialists, but also take into account the assessment of the student's work, given by their teachers. Teachers' assessment should take into account the flexibility of the student thinking, the ability to orient themselves in professional activities in solving problem situations, the ability to make the right decisions in the legal field with minimal

economic losses, etc.

In order to assess the final level of professional competence of future specialists, we believe it would be expedient to use fuzzy inference algorithms. The possibility and feasibility of such an approach is that in the conditions of incompleteness and inaccuracy of the information obtained during their testing, the construction of the effective mathematical model and obtaining reliable results with its help are problematic and controversial. In this case, fuzzy modeling methods, based on expert assessment are most efficient and they will enable to obtain the reliable results.

#### References:

- 1 Theoretical and methodological principles of modeling the professional competence of heads of educational institutions: monograph / [Yelnikova G. V., Zaichenko O. I., Maslov V. I. etc.]; in a row. G. V. Yelnikova. – Kyiv-Chernivtsi: Knigi–XXI, 2010. – 460 p. (Ukr)
2. Karpenko V. P. Assessing the Formation of Ecological Competences: training manual / V. P. Karpenko, I. I. Mostov'yak, T. M. Pushkaryova-Bezdil. – Odessa: NU “OMA”, 2017. – 59 p. (Ukr)
3. Leont'ev A. N. Selected Psychological Works / A. N. Leont'ev. – Moscow: MSU, 1983. – Vol. 2. – 318 p. (Rus)
4. Bizayeva A. A. Reflexive processes in the consciousness and activity of the teacher: diss. ... Cand. psych. Sciences: 19.00.07 / A. A. Bizayeva. – Moscow, 1993. – 238 p. (Rus)
5. Stymak A. Technology for determining the level of competence of a university graduate using algorithms of fuzzy logical inference / A. Stymak // Bulletin of the National University “Lviv Polytechnic”. Computer Science and Information Technology. – 2015. – No. 826. – P. 109–122. (Ukr)
6. Ligotsky A. O. Modern Methodological Approaches to Forming the Professional Competence of Future Specialists in Logistics of the Structural Structures of Ukraine / A. O. Ligotsky, L. M. Romanyshyna // Coll. Sciences. Proceedings of the National Academy of State Border Guard Service of Ukraine. Series: Pedagogical and Psychological Sciences. – 2009. – No 49. – P. 36–41. (Ukr)
7. Dobrotvor O. V. Methods of assessing communicative competence / O. V. Dobrotvor // Scientific Bulletin of the UNESCO KNLU Series Philology. Pedagogy. Psychology. – 2013. – Issue 26. – P. 239–243. (Ukr)
8. Kozlovskaya I. M. Formation of professional competence of future specialists on the basis of integrative approach: methodical recommendations / I. M. Kozlovskaya, Ya. M. Sobko, O. O. Stechkevich, O. M. Dubnitskaya, T. D. Yakimovich. – Lviv: Spom, 2012. – 64 p. (Ukr)
9. Zgurovsky M. Z. Models and methods of decision making in fuzzy conditions / M. Z. Zgurovsky, Yu. P. Zaichenko. – Kyiv: Naukova Dumka, 2011. – 275 p. (Ukr)
10. Kuzmin O. O. Assessment and analysis of the skills and competences of students of higher education / O. O. Kuzmin, D. P. Orlovsky, A. M. Kopp // Computer



Science, Information Technology and Management Systems: Materials Intern. scientific-technical Conf. young scientists, graduate students and students, November 28-30, 2018. – Ivano-Frankivsk: PNU, 2018. – P. 43–46. (Ukr)

11. Lugovskaya E. M. Criteria for estimation of professional competence of agricultural mechanics' technicians / E. M. Lugovskaya // Scientific Bulletin of Donbass. – 2013. – № 1. – URL: [http://nbuv.gov.ua/UJRN/nvd\\_2013\\_1\\_21](http://nbuv.gov.ua/UJRN/nvd_2013_1_21). (Ukr)

12. Gulai O. I. Criteria of formation of subject (chemical) competence of future builders / O. I. Gulai // Science and Education a New Dimension: Pedagogy and Psychology. – 2013. – Vol. 7. – P. 59–64. (Ukr)

13. Skvortsova S. O. Professional-communicative competence of elementary school teachers: monograph / S. A. Skvortsova, Yu. S. Vtornikova. – Odessa: Apricot Company, 2013. – 290 p. (Ukr)

14. Bachman L. Fundamental considerations in language testing / L. Bachman. – Oxford: Oxford University Press, 1990. – 268 p.

15 Broadfoot P. Teacher's conceptions of their professional responsibility: some international comparisons / P. Broadfoot. // Comparative education. – 1987. – Vol. 23. – № 3. – P. 6–9.

## ECONOMIC CULTURE AND FEATURES OF ITS FORMATION IN AN INTERDISCIPLINARY DIMENSION

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**Annotation.** *The article provides a theoretical and methodological explanation of the phenomenon of economic culture in the problematic field of interdisciplinary interactions. It is shown that economic culture is based on a person with his/her inherent biological, psychological, sociological, economic, and value orientation features.*

*The conducted analytical review proves the need to use the interdisciplinary dialogue of the economy with the human world, cultural values, and social institutions. After all, the issue of identifying motives, needs, psychological and social factors that determine the economic behavior of subjects becomes quite important, since each individual is a participant in economic relations, which requires interdisciplinary knowledge and skills that contribute to authentic orientation in the problematic field of economic relations.*

*In this regard, the rethinking of philosophical and cultural, pedagogical, economic, moral and legal, psychological and sociological concepts, oriented to the explication of the essential content of the concept of “economic culture”, makes it possible to understand it as a component of general human culture, which implies the interdependence of culture and economy with dominant human interactions and taking into account emotional and psychological activity, axiological, social-institutional, communication factors in the sphere of economic activity.*

*The identification of the outlined approaches proves that economic culture covers not only the issues of economic needs, preferences, interests and priorities, but in the context of problems of behavioral economics pays significant attention to the psychological, moral, psychological and cultural foundations of human existence. It is argued that economic culture needs economic expediency and moral imperatives, realization of creative abilities of young people, development of civic initiative, entrepreneurship. and*

*personal responsibility.*

**Keywords:** *pedagogy, economy, culture, economic culture, interdisciplinary approach, morality, law.*

In the modern conditions of information, service and knowledge foundations of socio-economic development and the establishment of a socially-oriented economy as a whole, which is dominated by the intellectual and cultural potential of a person, terms that for a long time did not occupy a proper place in the field of scientific knowledge and professional activity. After all, both scientific circulation and the communicative sphere have been enriched with a number of new concepts, among which economic culture is gaining special importance.

The phenomenon of economic culture reflects the interdependence of the cultural and economic concepts, and significantly expands the subject field of economic research by introducing new socio-cultural relations and connections into it. In this regard, there is a need to use the interdisciplinary dialogue of the economy with the world of cultural values and social institutions, which involves enriching the pedagogical discourse with philosophical and cultural, psychological, sociological, and moral and legal intentions.

However, it should be noted that for a long time the concept of “economic culture” did not receive proper evaluation and was mostly on the periphery of scientific research. In particular, in the fields of economic and pedagogical research of scientific activity in Ukraine, this concept began to be used only in 2000. And so, the insufficient level of development of economic culture and its components is noted by both domestic and foreign scientists (V. Moskalenko, O. Nesimko, L. Kytskai, I. Mastruk, M. Vladyka, O. Butko, Yu. Chuchalina, P. Lepk. A. Nor and others) as “what we lack, what we do not have enough” (Nesimko, 2006, p. 257), emphasizing the inadequate level of consideration of its place and role in the socio-cultural development of humanity as a whole.

On the other hand, in the writings of the founders of economic science, J. Bentham, A. Smith, F. Kotler, and F. J. Rogers, cultural factors are not removed from the agenda, but find their embodiment in extensive explanatory constructions in the role of a necessary market and consumer lever. The methodology of classical economic models is currently being expanded by adapting new approaches to the modern economic space in the works of N. Klein, I. Mann, M. Mark, D. North, K. Pearson, F. Hayek, etc.

At the same time, great attention is paid to the problems of economic culture by a number of pedagogical studies, since it is the general culture of the individual that is the result of educational and educational activities as a significant determinant of the personal and social development of an individual. In particular, the Concept of the Development of Economic Education asserts the formation of economic culture and the development of economic thinking through the prism of providing general economic and professional economic educational activities with such economic knowledge, which is “based on the historical, cultural and spiritual and moral traditions of the Ukrainian people, oriented on in-depth analysis economic processes contributing to the formation

of the foundations of a socially oriented economy” (Marshall, 2008).

The outlined guidelines are aimed at providing not only narrowly specialized knowledge of a financial and economic nature, but also those that determine the internal culture of young people, form their readiness to consciously harmonize the relations “man - society - nature - economy” (Marshall, 2008).

Therefore, a significant amount of scientific research is devoted to the problems of the formation of economic culture in the general education of schoolchildren in the context of educational activities (O. Butko, S. Bulavenko, I. Prokopenko, I. Leotyeva, N. Dzyubenko, N. Pasichnyk, O. Shpak, M. Babyak, S. Bulavenko, V. Teres, I. Savka, etc.) Thus, O. Butko singles out a number of common features of the economic culture of a student of a comprehensive school, such as: “personal formation”; “complex of economic knowledge, abilities and skills”; “development of economically significant qualities and moral values of the individual” and the need for their introduction in the process of economic activity, “adaptation of the student to socio-economic conditions” (Butko, 2016, p. 29).

Whereas economic culture will become an integral aspect of universal human culture, its focus (projection) is in the economic sphere of human relations. In this regard, T. Diehl notes that the beliefs and values of economic culture are quite often not associated only with economic objects, but are basic universal human values, to which the author attributes the attitude to nature and time, social activity, orientation on relationships with other people, etc. (Dil, 2005, p. 32). Thus, the American researcher observes the place and role in the economic culture of a specific individual in relation to the economic system based on cognitive, emotional and evaluative orientations. Therefore, it is very important to consider socio-economic processes in the cultural dimension of value, moral, legal personal development guidelines that ensure the ordering of the features of the economic interaction of subjects.

The concept of “economic culture”, always being in the continuum of scientific research, is considered through the prism of two paradigmatic approaches, including: “economy as nature” and “economy as culture” (Sedlacek, 2016).

The first, asserting the universality of values and models of behavior in the economic sphere, recognizes the natural-scientific paradigm as its strategy. To adopt this approach is to recognize economics as separate from politics, history, and morality. The second, “economy as culture”, recognizes the economic reality as part of the cultural reality, a kind of cultural phenomenon that is a product of civilization. According to T. Sedlacek, it is the paradigm, operating with the concepts of subjectivity, meanings, ideas and values, that acquires the status of normative, because it not only describes the world, but also outlines its perspective, opening new trajectories of economic development (Sedlacek, 2016).

In fact, ethical and legal, sociological and psychological factors play an extremely important role in economic life. It is economic culture that contributes to the implementation of moral, legal and value-oriented norms and ideals that condition the development of society and individual subjects of economic relations into economic

processes. After all, it is a peculiar mechanism of “reproduction and development of economic relations of society as a whole and of an individual individual in various activity and subject forms” (Moskalenko, Shaigorodskiy, Mishchenko, 2012, p. 8), which requires social-institutional and personal dimensions for its functioning.

In particular, the relevant political system, legal regulators, moral norms (social-institutional dimensions) and needs, economic knowledge, value orientations, professional activity and individual motives, behavior of individuals, consciousness (personal dimensions). And it is based on a person with biological, psychological, sociological, economic and value-oriented features inherent to him/her. This proves the interdisciplinary dimension of economic culture, which is built through the prism of the intersection of various fields of scientific knowledge.

Thus, culture as a form of human universality, represented through a wide range of interactions, embodies the possibility of organizing individual existence to the level of unity and general significance. In this context, it becomes the object of a number of sociological scientific investigations (D. North, R. Ryvkina, F. Hayek, Maistruk, etc.), when culture is understood from the standpoint of social memory, cultural heritage of society, and collective knowledge of culture. By symbolizing reality, culture can contain social experience and be a universal tool for regulating human relations. At the same time, the issue of identifying psychological factors, motives and needs that determine economic behavior and are the basis of economic culture as a whole becomes quite important.

In particular, by analogy with the general definition of personality culture, the economic culture of personality, according to the authors of the monograph of the same name “Economic culture of personality: socio-psychological aspect” (Moskalenko, Shaigorodskiy, Mishchenko, 2012) is the economic world of a person, which exists as a unity of the material and mental, in which personal development of a person is reflected. Proposing for consideration the problem of the economic culture of the individual, the researchers place a special emphasis on the socio-psychological aspect of the individual, which “includes activity and the entire set of its connections in the sphere of economic reality (production, savings and consumption of material goods) and can be considered as a certain psychological economic space, which determines the strategies of economic behavior of a person, methods of economic activity, determines to individuals as subjects of economic activity their relation to the world as a whole” (Moskalenko, Shaigorodskiy, Mishchenko, 2012, p. 34). It is noteworthy that the authors of the monograph associate the process of forming the economic culture of the individual with “the internalization of the economic values of society into the internal determinants of economic socialization”, the consequence of which is the formation of the economic and psychological characteristics of a person, which reflect the degree of his personal growth. In such a section, the primacy is given to the system of society’s values, which are a guarantee of the preservation of social unity and its elements.

In this context, the research of Nobel laureates J. Akerlof and R. Shiller [46], who in 2001 received an award for the analysis of markets with asymmetric information, and

also substantiated the theory of the “irrational principle”, which was proposed in the book “*Spiritus Animalis*” is of great interest in this context. They also describe “how human psychology drives the economy and why it matters to global capitalism.” Translated into Ukrainian, the term “*spiritus animalis*” means “irrational principle”, which calls psychological factors decisive in the economic behavior of people. In particular, the game of an irrational nature affects economic instability and forced unemployment. Researchers consider human trust to be the earliest manifestation of this phenomenon.

Therefore, we cannot ignore A. Marshall’s instruction that economists must have “a deep feeling and accessible knowledge of the hidden sources of human behavior”, and therefore “moral motives are also the forces that the economist must take into account and recommend the best methods for their implementation (Marshall, 2008, p. 30, 47). In this section, the instruction of morality permeates the work of S. Bowles “*Moral Economy. Why good incentives will not replace good citizens*”, where we get an attempt of a metaphorical transformation of the concept of moral economy, which expresses the semantic vectoriality in the ethical and cultural dimensions, in which value beliefs and rationalized calculations of individuals determine the motivation of social behavior. Beliefs and rationalized expectations mutually influence each other, but there is also an inverse relationship - displacement and addition of valuable beliefs with incentives.

Trying to answer the question about the possible reaction of people to monetary rewards, charges or other incentives that a priori assume “*Homo economicus*”, in other words an amoral and selfish individual, S. Bowles claims that the political measures resulting from such a paradigm can displace ethical and altruistic motives, having witnessed their own counterproductiveness. However, such displacement takes place under the condition of expecting a selfish reaction from the individual, since the employer considers him lazy, unable to undertake and carry out voluntary financial charity, which can easily be officially replaced by fines or rewards.

At the same time, the effective functioning of the economy requires legal regulation of economic relations and ensuring the economic security of the state as a whole, which implies the interdependence of the economy, law, and the state as important social institutions of culture. In this regard, an important role in the socio-cultural life is played by the relationship between the professional activity of a lawyer and the economic life of society, which concerns the implementation of legal norms in economic processes, in particular: legalized business activity, prevention of harmful production, prevention of financial and economic abuses, distribution of property rights, rights and obligations of citizens as subjects of economic relations (R. Coase).

All of the above testify to the urgent need to improve the regulatory and legal framework as an important factor in the formation of the economic culture of society. In this context, researching the economic culture of L. Kytskaya’s business subjects, I emphasize the need to improve their professional, legal and moral characteristics in order to ensure the proper level of management and professional organization.

Therefore, it is economic culture that contributes to the implementation of moral, legal and value-oriented norms and ideals that condition the development of society and

individual subjects of economic relations into economic processes. After all, this is a peculiar mechanism of “reproduction and development of economic relations of society as a whole and of an individual in various activities and subject forms” (Bourdieu, 2004, p. 8), which requires social-institutional and personal dimensions for its functioning. In particular, the relevant political system, legal regulators, moral norms (social-institutional dimensions) and needs, economic knowledge, values, professional activity and individual motives, behavior of individuals, consciousness (personal dimensions). After all, it is based on a person with his/her inherent biological, psychological, sociological, economic and value features. This fact proves the interdisciplinary dimension of economic culture, which is built through the prism of the intersection of various fields of scientific knowledge.

**Conclusions.** Thus, the theoretical and methodological characteristics of economic culture in the discourse of various spheres of scientific knowledge: pedagogy, cultural studies, economics, psychology, sociology, ethics and law prove the need to use the interdisciplinary dialogue of economics with the human world, cultural values and social institutions. After all, the issue of identifying motives, needs, psychological and social factors that determine the economic behavior of subjects becomes quite important, since each individual is unique in economic relations, which requires interdisciplinary knowledge and skills that contribute to authentic orientation in the problematic field of economic relations.

As we can see, the concept of “economic culture”, having absorbed the meaning-making principles of modern economic theory and practice, actualizes the problem of cultural-economic relations and appears as an integrative scientific field that most clearly demonstrates the connection between economy and culture and at the interdisciplinary level provides the use of cultural patterns in the design and forecasting of economic decisions. At the same time, the sociological, psychological, moral-ethical and normative-legal foundations of the economy play an extremely important role in the economic relations.

This gives reason to consider economic culture as a projection of general human culture, a qualitative characteristic of an individual and society, which centers the diversity of human interactions in the sphere of economic activity in the problematic field of cultural and economic interdependence. Such an understanding of economic culture takes the economic subject beyond its subordination only to objective economic laws, and affirms it in a multidimensional space of freedom, choice, responsibility, and decision-making.

#### References:

1. Akerlof J., Schiller R. (2010). *Spiritus Animalis, or how human psychology controls the economy and why it is important for world capitalism*. M.: Alpina Business Books 272 p.
2. Akhnovska I. O. (2017). Formation of the economic culture of society. Electronic scientific publication on economic sciences “Modern Economics”. No. 3. P. 6-13.

3. Butko O.V. (2016). The essence and peculiarities of the formation of the economic culture of secondary school students in the educational process. Bulletin of Zhytomyr Ivan Franko State University. P. 26-31.
4. Bourdieu P. (2004). Forms of capital. Western economic sociology: restoration of modern classics. M.: Russian political encyclopedia. P. 519-536.
5. Deal T. (2005). What kind of economic theory do we need. Economist. No. 2. pp. 3-15.
6. Marshall A.(2008). Fundamentals of economic science. M: Eksmo. 838 p.
7. Moskalenko V. V., Shaigorodskyi Yu. Zh., Mishchenko O. O. (2012). Economic culture of personality: socio-psychological aspect [monograph]. K.: Center of Social Communications. 348 p.
8. Nesimko O. D. (2006). Concept of economic culture of a lawyer and its structure. Actual problems of the state and law. Issue 29. P. 257-261.
9. On the approval of the Concept of Economic Education Development. (2003). Collegium of the Ministry of Education and Science of Ukraine. Decision 04.12.2003 N 12/7-4. URL: [https://zakon.rada.gov.ua/rada/show/v12\\_7290-03#](https://zakon.rada.gov.ua/rada/show/v12_7290-03#).
10. Sedlacek T. (2016). Economics of good and evil. In search of the meaning of the economy from Gilgamesh to Wall Street. Moscow: Ad Marginem Press. 544 p.



## USE OF IMMERSIVE TECHNOLOGIES IN TEACHER TRAINING

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**Annotation.** *The article presents the author’s vision of the possibilities of using augmented reality tools in teacher training based on the analysis of research by domestic and foreign scientists who consider AR as a modern means of education. The problems of introducing augmented reality tools into the educational process of teacher training in institutions of higher education (HEI) are highlighted, in particular, the problem of increasing the effectiveness of motivation and training of education seekers through the use of AR-applications on mobile devices; formation of information culture by means of AR technology, etc. The article describes the increase (addition) of visual capabilities of electronic (digital) textbooks through the use of interactive objects of augmented reality affects the quality of formation of the readiness of future teachers to use and implement AR technologies and tools. Software for creating and using educational digital content, including elements of augmented reality, was studied.*

**Keywords:** *Means of supplementary education; educational process; AR technologies, digital technologies, virtual reality, ICT.*

**Introduction.** The relevance of the implementation of augmented reality technologies in the educational process of teacher training is that the use of such an innovative tool increases the motivation of education seekers regarding educational disciplines and the level of assimilation of information, synthesizing various forms of its perception.

At the current stage of the development of higher education, there is a trend towards a wider use of digital technologies for teaching and training students of higher education. Cognitive and didactic computer games, exercises, virtual educational trips, educational videos can be used in the construction of the educational process. Augmented reality (AR) is an innovative tool for the cognitive development of students – supplementing the physical world with digital data in real time. This is the technology of superimposing virtual reality on objects of the physical world. Such products include games with AR applications, travel games, interactive books, encyclopedias and fiction books by Ukrainian and foreign authors. The use of such technology in higher education institutions promotes better learning through interactivity and presentation in 3D, improves

cognitive activity, helps to be more attentive, develops creative thinking and imagination. Educators should support and encourage the cognitive interests of students, for this purpose use modern digital technologies, prepare the future teacher to use augmented reality applications in the educational process of various educational institutions. There is a need to form the readiness of future teachers in the field of using augmented reality technologies in professional activities.

**Statement of the problem.** The research problem is caused by the lack in the domestic educational space of adapted educational materials with the use of augmented reality systems for the development of interactive educational materials, which made it necessary to turn to foreign experience – in particular, open online courses on the development of augmented reality tools.

In the conditions of the rapid development of science, technology and technology, the entire educational system is undergoing significant changes, as in the world, the use of modern devices and gadgets in the educational process, including mobile phones, sets the task for teachers to interest the «digital generation» in the study of one or another disciplines, to maintain attention, to form in them a steady interest in acquiring knowledge, is the main means of realizing the content of education. Accordingly, the issue of content, structure, content, compliance of educational material with current programs and visualization of the presented information deserve special attention. In our study, we will focus on the use of augmented reality technology for the purpose of visualizing educational information. The visualization of educational information, according to

L. Bilousova and N. Zhityenov, with whom we agree, is due to the need to take into account the cognitive features of the modern generation, the need to present the educational material in a format convenient for perception, understanding, assimilation, and memorization [1].

Augmented reality appears as a completely new interactive technology that allows superimposing computer graphics, video, audio or text information on real-time objects. Unlike virtual reality, AR-interfaces allow users to see embedded virtual objects in the real world and manipulate them in real time.

**Analysis of previous studies.** Currently, the issue of using augmented reality in teacher training has attracted the attention of a sufficient number of foreign and domestic scientists. Education experts and scientists recommend approaches based on visualization and cognitive research that increase learners' interest and help them stay motivated to learn. The latest digital content developed with the help of augmented reality can become the basis for the implementation of such an approach.

Domestic researchers V. Bykov, T. Gruntova, Yu. Yechkalo, S. Semerikov, A. Stryuk, A. Pikilnyk analyze the significant contribution to the research of augmented reality technology in the educational process of higher educational institutions [1] and explain that the introduction of such technologies in education increases its effectiveness, promotes the development of cognitive activity, improves the quality of knowledge acquisition, and increases interest in learning. S. V. Aranova emphasized the issue of

finding pedagogical tools and formats for visualizing educational information due to the large amount of visual information and the complexity of requests for the results of modern education in the information society. [3]. V. Tron, I.Yu. Topolova, O.V. Merzlykin [4] claim that the use of digital technologies is necessary for the effective education of modern students who have specific educational needs, namely: the use of mobile applications, the organization of cooperation, the implementation of interactive exercises and the visualization of content.

The purpose of the article. Describe and explore the possibilities of using AR technology on the example of the educational and methodological complex «Creating augmented reality software» for students of higher education in the specialty 014.09 Secondary education (Informatics).

**Theoretical foundations of the research.** The use of mobile Internet devices expands the boundaries of the traditional educational environment of higher educational institutions to a mobile-oriented – open pedagogical system, which includes psychological and pedagogical conditions, mobile information and communication technologies (ICT) and tools for learning, research and management, ensures cooperation, interaction, personality development of education seekers in the process of solving educational and scientific problems. One of the ways to increase the effectiveness of mobile-oriented learning is the use of augmented reality technology, which allows you to combine real and virtual learning tools with mobile Internet devices. Mobile Internet devices implement the concept of mobile learning – learning that does not depend on time and place. The concept of augmented reality has been developing since the 1960s and is very useful, powerful and very promising, especially in education. Unlike virtual reality, augmented reality does not create a completely virtual environment, but combines virtual elements with the real world: virtual objects are added to the user's real environment, which change as a result of his actions. Virtual reality is an environment in which the presence of a person in a certain real or imaginary world is simulated by a physical computer.

Expanding the visual capabilities of electronic (digital) textbooks through the use of interactive augmented reality objects develops life-long learning skills in the participants of the educational process. It is important to form an interest in books, to teach to feel the beauty that lies in the artistic word. The depth of perception of a work depends not only on the development of critical thinking and an aesthetic sense associated with a sense of beauty, an understanding of the values accumulated in an artistic image, but also on emotional intelligence. Therefore, the development of dialogic interaction with works of art will be greatly facilitated by the use of augmented reality technology, which primarily evokes an emotional resonance with its visualization and promotes the activation of creative imagination.

**Research results.** The results of the analysis of the essence of augmented reality technology and the content of competencies allow us to assume that the use of augmented reality in the educational process can contribute to the effective formation of the following competencies: personal, technological, sensory-cognitive, research, natural-ecological, communicative, artistic-speech, artistic-creative, digital, etc.

Software for designing augmented reality tools for educational purposes:

There are many software available for developing augmented reality tools, the most popular of which as of 2018 are as follows.

Wikitude SDK is the main product of the company of the same name since 2008 [11]. The SDK includes image recognition and tracking, 3D model rendering, video overlay, and geo-information services. In 2017, Wikitude launched SLAM (Simultaneous Localization And Mapping) technology, which allows recognition and tracking of objects, including without a marker. For location-based augmented reality, the position of objects on the mobile device screen is calculated using the user's geolocation (via GPS or WiFi), the direction in which the user is moving (using the compass), and the speed (using the accelerometer).

The cross-platform SDK is available for Android, iOS and Windows operating systems, and is also optimized for several augmented reality glasses (Epson Moverio, ODG R-7, Vuzix M100).

Supported development tools: JavaScript API, Native API, Unity3D, Xamarin, Titanium. The non-commercial version of the SDK applies a watermark to images – in all other respects it is equivalent to the commercial version costing 1990 euros.

ARKit [12] is a relatively new (since 2017) tool from Apple. Apple's SDK uses iPhone / iPad hardware, motion sensors and an augmented reality camera.

Supported platforms: iOS.

ARKit supports 2D image recognition (AR triggers using posters, signs, images) and 2D image tracking, i.e. the ability to embed AR objects. The SDK allows you to develop programs that recognize objects in real life and three-dimensional objects, as well as place virtual objects in real space. The current version of ARKit 2 makes it possible to develop multiplayer games with augmented reality.

Vuforia [14] is one of the most popular augmented reality development platforms. The SDK implements the following functionalities: recognition of different types of visual objects (cylinder, box, plane), text and environment recognition, VuMark (combination of image and QR code).

With Vuforia Object Scanner, you can scan and create marker objects. The recognition process can be implemented using a database (local or cloud storage).

Image registration allows developers to locate and target virtual objects, such as media content and 3D models, against real-world images when viewed through mobile cameras. The virtual object is oriented to the real image so that the observer's point of view is related to them in the same way to achieve the main effect – the feeling that the virtual object is part of the real world.

Vuforia supports a variety of 2D and 3D marker types, including unlabeled image targets, 3D multitargets, and benchmarks that highlight objects in a scene for recognition. Additional features include obstacle detection using so-called «virtual buttons», target detection, and the ability to programmatically create and reconfigure a target in self-modifying code.

Supported platforms: Android, UWP, iOS, Unity Editor.

Vuforia provides programming interfaces in Java, C++, Objective-C and .NET through integration with the Unity game engine. Applications created by the Vuforia platform are compatible with a wide range of devices, including iPhone, iPad, Android version 2.2 and processor starting from ARM v6 architecture.

All plugins and platform features are free, but contain Vuforia watermarks. Limits apply only to the number of VuMark objects and recognition in the cloud. Paid versions without watermarks start at \$99 per month.

Other free AR development tools include ArUco, JavaCV, A-Frame, ApertusVR, ATOMIC Authoring Tool, Goblin XNA, GRATF, DroidAR, mixare, PTAM, GeoAR, BeyondAR, Mangan, ARma, commercial ones include 8th Wall, Lay SDK, Scangine , Catchoom CraftAR AR SDK [15].

A wide range of augmented reality design tools allows you to freely combine them as plugins to Unity, a cross-platform tool for developing 2D and 3D applications running on macOS X, Windows, and Linux.

Unity-based apps run on Microsoft Windows, macOS, Linux, Xbox One, Wii, Wii U, PlayStation 3, PlayStation 4, Vita, iOS, Android, WebGL, Facebook's TvOS, and Nintendo Switch.

The results of scientific and experimental work on the selection of tools for the study of augmented reality are analyzed, we get the profitability of conclusions about the feasibility of joint use of Vuforia and Unity. The resulting developments are offered for use on various mobile platforms, primarily Android.

We have developed an optional course «Creating augmented reality software» for future computer science teachers.

The content of the optional course consists of a tutorial on developing augmented reality tools in Unity 2018.

Accordingly, the course will include the module «Creating augmented reality software».

**Conclusions and prospects for further investigations.** In the process of researching the problem of professional training of future teachers for the use of augmented reality technologies in education, we solved the tasks and results, the generalization of which makes it possible to draw conclusions that.

1. There are many SDKs for developing augmented reality tools, the leading ones are Wikitude, ARKit, ARCore, Vuforia, DeepAR, Easy AR, Xzimg, ARtoolKit, which are free for non-commercial use. A wide range of augmented reality development tools allows you to freely combine them by connecting them as modules to Unity, a multi-platform tool for developing 2D and 3D programs. Accordingly, the technological requirements for the development of augmented reality software are determined by the chosen IDE and SDK. We can note that expensive equipment is not required, it is enough to use smartphones or tablets with free programs installed.

In the process of preparing future teachers for the use of augmented reality systems for the development of interactive educational materials, it is advisable to apply a comprehensive approach, in which the design using standard objects is performed in the

visual design environment, and the provision of standard objects with new properties and the creation of a new related object-oriented programming environment. At the current stage of ICT development, we see the feasibility of joint use of the Unity environment for visual design, Visual Studio or a similar programming environment, as well as virtual (Google VR or similar) and augmented (Vuforia or similar) reality platforms. The implementation of the integrated approach was carried out as part of the optional course “Creating Augmented Reality Software”, which includes the content module “Development of Augmented Reality”. The conducted research can be continued in the direction of the development of educational and methodological complexes for the design of subject-oriented systems of augmented reality as a component of professional training.

#### References:

1. Gruntova, T., Yechkalo, Yu., Stryuk, A., Pikilniak, A. Tools of augmented reality in teaching physics in institutions of higher technical education. Higher and secondary school pedagogy, 2018. No. 51. P. 47-57. <https://doi.org/10.31812/pedag.v51i0.3655>
2. A. M. Striuk, (2018) Designing of augmented reality learning objects Transactions. Georgian Technical University. Automated control systems, 2 (26). pp. 127-134. ISSN 1512-3979.
3. Aranova S. V. To the methodology of visualization of educational information. Integration of artistic and logical. Bulletin of Adygea State University. Series 3: Pedagogy and psychology. 2011. No. 2. URL: <https://cutt.ly/rgnTLud>
4. Merzlykin, O., Topolova, I., Tron, V. Development of key competencies by means of augmented reality in CLIL lessons. Educational dimension, 2018. No. 51. P.58-73. <https://doi.org/10.31812/pedag.v51i0.3656>
5. Sokolyuk O. M. Information and educational learning environment in the conditions of educational transformation. Scientific notes. Series: Problems of the methodology of physical, mathematical and technological education. 2016. Issue 12(III). P. 48-55.
6. Rashevskaya N. V. Prospects for the use of augmented reality tools in the process of training future engineers Scientific Bulletin of the Uzhhorod University. series: “Pedagogy. Social work”. 2018. Issue 2 (43). P.226-228. URL: <http://eur-ws.org/Vol-2387/20190437.pdf>
7. Mintii, I., & Solovyov, V. Augmented reality: Ukrainian modern business and future education. Educational dimension, 2018. Vol. 51, pp. 290-296.
8. Hsin-Kai Wu, Lee Silvia Wen-Yu, Chang Hsin-Yi, Liang Jyh-Chong. Current status, opportunities and challenges of augmented reality in education. Computers & Education, 2013. Vol.62(1). Pp. 41-49. Elsevier Ltd. Retrieved June 11, 2020 URL: <https://www.learntechlib.org/p/132254/>
9. Yuen, S., Yaoyuneyong, G., & Johnson, E. Augmented Reality: An Overview and Five Directions for AR in Education. Educational Technology Development and Exchange, 2011. Vol.4. Pp. 119-140.

10. Klopfer E., Squire K., Environmental Detectives — the development of an augmented reality platform for environmental simulations. *Educational Technology Research and Development*. 2007. Vol. 56(2). Pp.203-228. DOI: 10.1007/s11423-007-9037-6
11. Wikitude Augmented Reality: the World's Leading Cross-Platform AR SDK. <https://www.wikitude.com> (2018). Accessed 17 Aug 2018
12. ARKit - Apple Developer. <https://developer.apple.com/arkit> (2018). Accessed 25 Oct 2018
13. ARCore - Google Developer | ARCore | Google Developers. <https://developers.google.com/ar> (2018). Accessed 25 Oct 2018
14. Vuforia | Augmented Reality for the Industrial Enterprise. <https://www.vuforia.com> (2018). Accessed 17 Aug 2018
15. Herpich, F., Guarese, R.L.M, Tarouco, L.M.R.: A Comparative Analysis of Augmented Reality Frameworks Aimed at the Development of Educational Applications. *Creative Education*. 8(9), 1433–1451 (2017). doi:10.4236/ce.2017.89101

## FEATURES OF THE INFLUENCE OF FAMILY RELATIONS ON THE SELF-ACTUALIZATION OF ELEMENTARY SCHOOL TEACHERS

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**Annotation.** *The mentioned problem attracts the attention of scientists because it is in the professional sphere that a person achieves the maximum disclosure of personal potential. In turn, family relationships form the psychological space of an individual, determine the quality of a person's life, determining his subjective feeling of satisfaction with himself and others. As a result, there is a need to study psychological determinants that contribute to the maintenance of harmonization in family relationships as one of the factors of successful self-actualization of primary school teachers.*

*The article defines the main approaches to the problem of building marital and child-parent relationships in the process of personality development. The humanist-oriented principles of family relations are given. The family conditions for the self-actualization of the primary school teacher's personality have been formed.*

**Keywords:** *personality, personal development, education, professional activity, professional development.*

The leading sphere in the socio-economic, cultural and spiritual development of Ukraine is the education system, where the key role belongs to the teacher. Thus, the success of the educational business depends on his professional skills and competences, experience, pedagogical skills. In recent years, researchers have been actively studying the problem of self-actualization in the conditions of professional activity. Interest in this problem is due to the fact that it is in professional activity that the maximum disclosure of the personal potential of an individual can be achieved. Self-actualization of primary school teachers is considered mainly as a result of professional self-determination, as part of the professional development of a specialist, as an important indicator of professional identity. The new Ukrainian school needs a new teacher who can become an agent of change.

In turn, the family helps to satisfy personal needs, the frustration of which leads to changes in personality development and internal conflicts that tear a person apart from the inside. Therefore, from our point of view, family relationships are one of the most important components of life. This prompted us to study the psychological conditions that ensure the maintenance of harmony in family relationships as a factor in the successful self-actualization of primary school teachers.

The importance of the influence of family relationships on personality development



is confirmed by many scientists. In the psychological and pedagogical literature, considerable theoretical and empirical material related to the problem has been accumulated. The writings of famous teachers and public figures emphasize the crucial importance of family relationships in the development of each family member (husband, wife, child): Ya. Korchak, V.O. Sukhomlynskyi, K.D. Ushinsky; the role of the marriage partner and the “adult-child” relationship as a factor in the formation of personality is reflected in the works of domestic (L.V. Gonchar, A.A. Pasichnik) and foreign (N. Ackerman, J. Bujenthal, K. Rogers, E. Shostrom) scientists; social, pedagogical and sociocultural conditions of the family and their influence on the personal sphere of spouses and children were studied in the works of S.L. Bratchenko, A.B. Orlova, V.Yu. Rudkova, N.M. Serdyuk, O. Yaremchuk and others; parental conflicts in the process of family relations as a source of emotional and psychological problems of adults and children are highlighted in the works of American psychologists E. Bern, A. Tepluk. In the studies of domestic psychologists O.B. Emishyants, A.I. Zakharova, A.E. Lichko, O.A. The article examines the disharmony of family relationships, which leads to the distortion of personal development, which is often a factor in the occurrence of stress in both adults and children.

Analyzing the works of the above-mentioned researchers on this topic, however, it is necessary to focus attention on issues that remain insufficiently developed and unresolved in both theoretical and practical aspects. Among these should be included the study of the specifics of the impact of family relationships on the self-actualization of primary school teachers.

The purpose of the article is to consider the positions of domestic scientists regarding the study of the problem of the influence of family relationships on the self-actualization of primary school teachers. Achieving the set goal determines the solution during the research of the following tasks: to single out conceptual approaches to the problem of building marital and child-parent relationships in the process of personality development, which exist within the framework of psychological schools; highlight humanist-oriented principles of family relations; to form family conditions for the self-actualization of the primary school teacher’s personality.

Features of the modern state of Ukrainian society, in which emphasis is placed on the development of the individual, cause interest in the process of self-actualization (Emishyants, 2013). Thus, studying the characteristics of family relationships of primary school teachers can help to better understand the individual who is in a marital relationship, and therefore to prevent potential problems or increase the effectiveness of personal growth, that is, the development of self-actualization. In order to solve this task, we analyzed the psychological and pedagogical literature, which will help to reveal the degree of influence of family relationships on the self-actualization of the individual and the creation of family psychological conditions for its self-actualization in the process of professional activity.

Confirmation of the role of family relationships in the process of self-actualization of the individual is the presence of studies in foreign psychology: N. Ackerman (determination

of the role of family ties, family identity in the development of personality) (Ackerman, 1958), A. Tepliuk (research of the influence of family relationships on the emotional feelings of children preschool age) (Teplyuk, 2015). In domestic psychology and pedagogy, there is a shortage of works on the study of the conditions of the process of self-actualization of the personality in the family, and there are practically no works devoted to the influence of family relationships on the development and self-improvement of the personality of an elementary school teacher. A review of psychological and pedagogical scientific literature devoted to the study of the problems of self-actualization of the individual in the context of family relationships allowed us to conclude that this issue is gaining relevance in the modern period of social development. According to domestic scientists O.A. Posvistak (determination of psychological characteristics of the family) (Posvistak, 2017), A.A. Pasichnyk (determining the influence of family relationships on the development of a preschool child) (Pasichnyk, 2017), L.V. Honchara (identification of the peculiarities of the formation of harmonious relations between parents and children) (Gonchara, 2017), O. Yaremchuk (development of a model of family relations) (2017), N.M. Serdyuk and V.Yu. Rudkova (development of the system of family values) (Serdyuk, Rudkova, 2020) the modern institution of family and marriage is in a difficult situation, which is manifested in the loss of family values, a low level of psychological culture of family relationships, as well as a large number of divorces.

To determine the influence of family relationships on the self-actualization of the individual, we analyzed the main approaches to the problem of building marital and child-parental relationships in the process of personality development, which exist within the framework of psychological schools. Close to the object of our research, the position of understanding the meaning and goals of family relationships is held by humanistic and existential psychology, where the main task of family relationships is the promotion of personality development, the characteristic features of which will be self-awareness, orientation to the future, the opportunity to be free and responsible for oneself and the environment world.

In humanistic psychology, this position is presented in the works of S.L. Bratchenko (development of an existential-humanistic approach to the issue of personality development in the context of family relationships) (Bratchenko, 1997), T. Gordon (development of effectiveness training for parents) (Gordon, 1975), K. Rogers (introduction of a person-oriented approach to the development of family relationships) (Rogers, 1959). It is based on love, respect, mutual understanding, initiative and creativity.

In our opinion, an interesting pedagogical paradigm in humanistic psychology is the person-oriented approach (OOP), which was introduced into the psychological and pedagogical science by K.R. Rogers (Rogers, 1959). In the concept of OOP, the goal of family relationships is support and assistance in personal self-development.

As part of the PLO, K.R. Rogers, people who contribute to the personal development of an individual, help him in finding and creating favorable conditions for self-actualization, are designated by the term “facilitator”. From our point of view, it is appropriate to use this term both in “parent-child” and “husband-wife” relationships. In

this case, the spouses should become a partner-facilitator for each other. This is due, first of all, to the fact that marriage partners should not change each other's personality according to a certain standard, should not invest in it from the outside the "necessary" content, but should only help each other to develop themselves - to become themselves. Therefore, the release of one's own reserves of growth is the main purpose of marital facilitation.

Important features of facilitating relationships are congruence, acceptance and empathy, the formation of which occurs exclusively on the basis of constructive dialogue. The dialogic style of communication and interaction is a fundamental characteristic that distinguishes OOP from prescriptive psychological and pedagogical concepts, where, according to E. Shostrom, only authoritarian and manipulative styles are possible (Shostrom, 1967). Further development of the idea of OOP in family relationships was found in the works of scientist T. Gordon. The main focus is on mastering communication skills, especially the transfer of feelings from person to person. The scientist emphasized the importance of sincerity in family relationships, which is achieved in dialogic communication, which is based on active listening and emotional self-expression (Gordon, 1975).

Thus, in the process of analyzing theoretical sources, we established that existential psychology, represented by V. Frankl and D. Bugental (Bugental, 1968), also highlighted the possibilities of promoting the self-actualization of the individual. Freedom, according to J. Bugental, is the individual's ability to self-realize: "An important feature of "human nature" is the internal human motivation to "seek the healthy", which, as soon as it is released, prompts a person to move towards greater efficiency and satisfaction in life" (Bugental, 1968).

Therefore, existentialism considers a person as the center of his own formation, where both resources and mechanisms of personal dynamics are laid. The importance of family relationships in this process is due to the creation of conditions that contribute to the individual making his own choice and the ability to bear responsibility for this choice. And if the representatives of the humanistic-oriented approach emphasize the self-development of one's own personal potential, based on the belief in the primary positive essence of a person, then the existentialists have a different opinion: a person has both positive and negative qualities that can also be developed in oneself. Therefore, the process of self-actualization, from the point of view of existentialism, is not so much the actualization of a person's natural potential as a constant "completion" that requires the maximum concentration of human resources, will, creativity, abilities, and spiritual forces.

Thus, summarizing psychological and pedagogical approaches to the issue of personality development in the context of family relationships, we can conclude that from the standpoint of the formation of a self-actualizing personality, the most important for our research are the provisions of humanistic and existential psychology, which in the works of S.L. Bratchenko and O.L. Podlinyaeva are combined into a single existential-humanistic approach (ESP). So, from the position of EHP, the self-actualization of the

individual in the conditions of family relationships occurs if the spouses do not shape and transform each other under a single standard, do not invest in each other any “necessary” content from the outside, but only help the self-development subject become yourself.

It is important to note that in today’s conditions, the activity of a primary school teacher is psychologically difficult work, which is aimed at the expression of professional orientation, the presence of strong knowledge and stable interests, knowledge of laws, theory and practice of education and upbringing. The specified qualities are combined and function in a complex structural whole that characterizes the teacher’s personality.

The main differences of the family of the primary school teacher, which is aimed at self-actualization of the individual, in the works of O.B. Orlov advocates humanistically oriented principles of family relations (Orlov, 2005): increased sensitivity to the interests and needs of its members, and above all, children; understanding development as “individualization” and not “socialization”; communicative attitudes to acceptance of others, empathy, active listening to others, self-acceptance and self-development.

At the heart of the self-development of the individual, according to the concept of the humanistic worldview, is the humanistic worldview of an adult - the facilitator. Humanistic beliefs, values, life-practical and theoretical knowledge of an adult are manifested in practice not only in their own self-development, but also in the unconditional recognition of the child’s right to self-development.

Taking into account the above, after summarizing the theoretical data, we formed the family conditions of the process of self-actualization of the primary school teacher’s personality. In this case, the marriage partners, having a humanistic worldview, focus on their own self-actualization, moving on the path of personal growth - the development of intrapersonal (self-understanding, self-acceptance, authenticity, naturalness, integrity of the “I”) and interpersonal (empathy, contact, tolerance, creativity, autonomy) personality qualities. The interaction of these qualities exerts an influence on the deep existential components of the personality, initiates development both at the mental level (cognitive processes, abilities, individual psychological features of the personality) and at the empirical level (socialization), thus contributing to the activation of the primary school teacher’s own potentials to self-actualization of the individual.

Sharing the conviction that from the beginning a person has a desire for self-development, such a couple builds communication with the child based on the principles of facilitating personal growth: parity, mutual respect, understanding, support, help in the form of constructive dialogue. Also, one of the conditions is facilitating dialogic communication, which mutually enriches and stimulates the self-actualization of the individual in both spouses and children.

Therefore, the definition of the essence of a teacher’s self-actualization and the use of this category demonstrate great variability, which is due to the fact that the self-actualization of an elementary school teacher appears simultaneously as a characteristic of the integrity of his personality and the level of his social activity, which is manifested in pedagogical skill, creativity, professional and pedagogical culture.

**Conclusions.** Thus, based on the analysis of foreign and domestic research, it can be

concluded that the importance of family relationships lies in the promotion of the development of a self-actualized personality based on a person-oriented approach. The family conditions for the self-actualization of an elementary school teacher are orientation (of the teacher and the spouse) to the psychological and pedagogical support of both each other and children in self-development on the basis of facilitation. Taking into account the above, extrapolating all of the above to the subject of our research, we assume that the psychological features of family relationships of primary school teachers are such personal characteristics as: self-acceptance, optimistic worldview, empathy, constructive communications, emotional stability, focus on personal development. The specified characteristics are identical to the characteristics of a self-actualized personality in the concept of EGP.

#### References:

1. Bratchenko S.L. (1997) Existential-humanistic approach in psychologists and psychotherapists. Imaton. 1997. No. 1. P. 7.
2. Gonchar L.V. (2017) Formation of humane relations between parents and children of primary school and teenage age: monograph. Kyiv: Zadruga LLC, 2017. 360 p.
3. Emishyants O.B. (2013) Psychological features of self-actualization of the individual depending on the type of family: complete/incomplete. Actual problems of sociology, psychology, pedagogy: a collection of scientific papers. Issue 18. Kyiv: Logos, 2013. P. 131-138.
4. Orlov A.B. (2005) Evolution of interpersonal relations in the family: basic approaches, orientation and trends. Journal of a practical psychologist. 2005. No. 4. P. 174-190.
5. Pasichnyk A.A. (2017) Psychological features of the influence of family relationships on the development of a preschool child. Scientific Bulletin of Kherson State University. 2017. Release. 2. Volume 3. P. 83-87.
6. Posvistak O.A. (2017) Theoretical and historical foundations of family psychology: monograph. Khmelnytskyi: KhNU, 2017. 402 p.
7. Serdyuk N.M., Rudkova V.Yu. (2020) Family values as the basis of forming relationships in the family. Scientific achievements of modern society: materials of scientific and practical conference (January 8-10, 2020). Cognum Publishing House, Liverpool, United Kingdom. 2020. P.928-932.
8. Yaremchuk O. (2017) Social-psychological model of the family myth: theoretical dimension. Bulletin of the National Academy of the State Border Service of Ukraine. 2017. Issue 1. URL: file:///C:/Users/WishMasterOk/Downloads/Vnadpn\_2017\_1\_13.pdf (date of access: 03/03/2020).
8. Ackerman N.W. (1958) The psychodynamics of family life. N.Y. : Basic Books, 1958. 379 p.
10. Bugental J.F. (1968) The humanistic ethic: The individual in psychotherapy as a societal change agent. Journal of Humanistic Psychology. 1968. No. 7. P. 11-25.
11. Gordon Th. (1975) Teacher's Effectiveness Training. N.Y., 1975.

12. Rogers C.R. (1959) A theory of therapy, personality and interpersonal relationship, as developed in a client-centered framework. *Psychology: A Study of a Science*. 1959. Vol. 3. P. 184 - 256.

13. Shostrom E. (1967) *Man, the manipulator: The inner Journey from Manipulation to Actualization*. Nashville, Tenn.: Abingdon Press, 1967. 256 p.

14. Teplyuk A. (2015) Diagnosis of emotional feelings of preschool age children in terms of family. *European Fachhochschule*. 2015. No. 4. P. 44-46.

## THE USE OF DIGITAL TECHNOLOGIES IN EDUCATION IN THE CONTEXT OF PROFESSIONAL TRAINING OF FUTURE TEACHERS OF VOCATIONAL EDUCATION (DIGITAL TECHNOLOGIES)

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**Annotation.** *The importance of the topic of the article lies in the fact that modern processes of digital computerization and transformation of society and education present the higher education system with the task of developing new methods and technologies for training specialists who will be ready and capable of effective professional activity in a modern virtual socio-educational environment. The purpose of the article is to study the priority tasks in the context of the professional training of masters, the forms and methods of training that contribute to the improvement of the quality of training with the use of innovative technologies; the role of digitization and computerization in the professional training of masters.*

**Keywords:** *digitalization of society, information technologies in education, digital literacy, higher education student, informational competences of teachers.*

The development of modern society based on knowledge and highly effective technologies requires making corrections in pedagogical theory and practice, intensifying the search for new models of education aimed at improving the level of qualifications and professional skills of masters, meeting the needs of society for specialists capable of successful adaptation and self-realization in the information society.

Thus, the main task of vocational education is the implementation of such a model of training of a qualified teacher of vocational training, which in the future will allow him to successfully compete in the labor market, to effectively implement his professional skills in the acquired specialty.

The use of digital technologies allows you to make any lesson non-standard, bright, rich, memorable. A modern teacher is engaged in various types of professional activities: pedagogical, educational, scientific, methodical, managerial. It has various possibilities of using a computer or information technologies to receive, transmit, systematize, process information, as well as for communication between colleagues, students, etc.

Informatization of education puts forward requirements for compliance of professional

training of future teachers. Therefore, one of the global goals of informatization of education is the training of specialists who are ready and able to apply new information technologies in the process of learning and management of education, who actively participate in the process of informatization of education. The use of such technologies in education allows not only to look at the educational process in a new way, but also provides the necessary scientific and methodological apparatus for their analysis and updating. In addition, ICT has a significant impact on the maintenance of education and management of the pedagogical process (planning, organization, monitoring, forecasting, etc.).

**Priority tasks in the context of professional training of future teachers of vocational education (digital technologies.** V. Bykov (2014), O. Spirin (2014), O. Pinchuk (2014) believe that the traditional training of specialists, oriented formation of knowledge, abilities and skills in the subject field, still lags behind modern requirements. Therefore, the formation of a system of knowledge, abilities and skills in the use of information and communication technologies in education is an urgent priority task in the context of professional training of teachers, for the implementation of which it is necessary to have: the ability to summarize, analyze and perceive information; readiness to use basic methods, methods and means of obtaining, storing, processing information, readiness to work with a computer as a means of information management; ability to work with information in global computer networks; the ability to understand the essence and importance of information in the development of a modern information society, to understand the dangers and threats that arise in this process, to comply with the basic requirements of information security; the ability to develop modern pedagogical technologies taking into account the peculiarities of the educational process, educational tasks and personality development.

The teacher's pedagogical skill consists in selecting the necessary content, using the best methods and means of learning in accordance with the program and pedagogical tasks.

The new requirements of society for the level of education and personal development have already led to a change in the technology of education. Today, innovative technologies make it possible to organize the educational process taking into account the professional direction of learning, as well as the orientation of the personality of the student of higher education to his interests, inclinations and abilities (Melnyk, 2021).

Among them, the leading place belongs to such types as student-centered learning, test forms of knowledge control, block-modular learning, project-based learning, case method, credit-modular evaluation system, joint learning, multi-level learning, conducting a binary lesson, distance learning.

As a result of the implementation, the functions of both the teacher and the student are radically changed. The teacher becomes a consultant-coordinator, since he performs the function of information monitoring, and students are given a great deal of autonomy in choosing the methods of learning the educational material.

The implementation of innovative educational technologies opens up wide opportunities



for the development of the process of differentiation and individualization of educational activities. The result of the application of innovative educational technologies depends to a lesser extent on the teacher's qualifications, but is determined by the totality of its components.

The quality of education can only be achieved by ensuring the effectiveness of each level of education. That is, the entire learning process is built according to the following scheme: perceive, understand, remember, apply, check. In order to achieve high-quality learning, it is necessary to consistently pass all these levels of cognitive activity. The use of various forms and methods in the process improves the quality of education.

**Forms and methods of training that contribute to the improvement of the quality of training with the use of innovative technologies.** The main forms and methods of learning that contribute to improving the quality of learning with the use of innovative technologies are: role-playing games, business games, seminars, watching conferences, debates, dialogues, problem-based learning, independent work, defending essays, individual works, creative essays, reports, reports; testing, program control, research works, etc.

In order to achieve effectiveness from the use of teaching methods, it is necessary to create a psychological portrait of the group and find out which methods can be used and which cannot be used (Gurevich, 2006).

Based on this, methods can be conditionally divided into two groups: methods that do not require special preliminary training (problem-based learning, performing actions according to an algorithm) and methods that require special preliminary training (independent training, independent work in class).

Formation of competences should be carried out in stages: teaching teachers to work with audiovisual and interactive teaching aids; use of acquired knowledge in teaching disciplines; use of the Internet in education; mastering the process of creating test tasks and conducting computer monitoring; creation and use of pedagogical software.

It is especially important to improve the quality of training of future teachers of professional education as representatives of the creative elite of the innovative society. In order for the system of training students of higher education in modern higher education institutions to live up to the expectations placed on it, it is necessary to understand and solve a number of pedagogical problems: the scale of the tasks that students face when mastering a large number of types of professional activities; the composition of higher education applicants is heterogeneous in terms of training and age; unavailability for many students of various professional activities; their low research potential. Information (digital) technologies in the training of future teachers make it possible to effectively structure and bring the educational process closer to world standards. They are based on certain schemes of distribution and assimilation of information. Such a synthesis allows for the development and application of open systems of intensive training both in the content aspect (the impact of education informatization on the content of education) and in the procedural aspect (the impact of education informatization on the educational process).

Thus, the teacher's work turns into managing the learner's activities and the process of interaction with him in the "person-person" system, solving the tasks of transition from ignorance to knowledge, from lack of understanding to understanding, from inability to skills, from helplessness to independence and the desire to share knowledge, skills and experience taking into account the personality of the student.

A student of higher education as a subject and object of interaction with a teacher creates new knowledge, skills, practical skills and personal qualities in the process not only in purely professional activities, but also in pedagogy. The teacher should warn students about the need for a balanced approach to obtaining information from external sources. Only a person with sufficient experience and knowledge can correctly assess the quality of information.

**The role of digitization in the professional training of future teachers of vocational education (digital technologies).** At the time of the global digitalization of modern society, one of the promising directions of the development of educational technologies is the use of virtualization technologies in the educational process. Virtual technologies make it possible to solve a fairly wide range of tasks regarding the organization of interaction in the "teacher-student" system, and in general, the organization of the educational process.

We agree with the opinion that there are significant differences in the level of training of school teachers and higher education teachers: for example, school teachers do not fully use digital solutions for effective communication at work and do not so actively create their own digital resources, are not fully competent in creating and modifying of digital educational materials and resources that make little use of Internet resources and online services in the process of students' teamwork training for joint project-research activities, and to a lesser extent than teachers of higher education institutions use digital tools to provide students with feedback (Tkachuk, 2021).

Moreover, according to the specialists who conducted the research, it is in the field of using new digital technologies that quite often teachers and lecturers of higher education institutions are inferior to their pupils (students).

Unfortunately, there are situations in educational organizations when digital technologies are actively used by a small number of subject teachers, helping to increase the effectiveness of the educational process only in their educational subjects. But it is obvious that it is impossible to increase the effectiveness of the entire traditional educational process with such partial examples, therefore, the digital transformation of educational systems is implemented unevenly, since the reforms carried out in education turn out to be ineffective precisely because of the insufficient digital literacy of educators, teachers and others.

Taking into account the above, the issue of forming the professional readiness of future teachers to work in a virtual socio-educational environment based on the development of their digital competencies in the context of professional training of future teachers of vocational education (digital technologies) is relevant.

In the modern conditions of digitization of the educational process, scientific and

methodological research in the field of professional training and retraining of teachers, as well as the study of approaches and methods of forming the components of digital competence/literacy of teachers, are of particular relevance. Moreover, it is clear that teachers who receive professional training as part of training according to the Standard should have more in-depth knowledge and skills in the field of application of digital technologies than secondary and elementary school teachers. This is due to the fact that they take an active part in the training of students who will soon find themselves in the digital realities of our time.

The exemplary profile of the digital competencies of the future teacher of professional education (Demyanenko, 2012) is quite apt in terms of the above-mentioned competencies:

1. Application of digital technologies in a professional pedagogical environment: organizational competence, competence in the field of professional cooperation; professional competence in the field of self-analysis of practical activities; competence related to continuous professional development in the field of digital resources.

2. Possession of professional skills for finding, creating and sharing digital educational resources: the ability to make a choice among existing digital resources depending on the purpose, context of learning and pedagogical approach; develop and modify digital resources; to provide management, protection and exchange of digital resources for the organization of digital content of students and other teachers.

3. Application of digital tools in learning and teaching: planning and implementation of digital devices and resources in the educational process; implementation of digital technologies for individual and group work; the use of digital technologies as a means of improving communication and cooperation; use of digital technologies to support self-learning (plan, control and record the results of own learning, provide evidence of progress, share knowledge).

4. Mastery of digital tools and strategies for evaluating learning outcomes: use of digital technologies for formative and summative evaluation; the ability to select, critically analyze and interpret digital evidence of student activity, performance and learning progress; use digital technologies to provide targeted and timely feedback to students; correctly interpret the evidence presented by digital technologies and use it to make decisions.

**Conclusions.** Thus, the digital literacy of future teachers of vocational education (digital technologies), in general, is a set of knowledge, abilities and skills that a person needs for safe and effective use of digital technologies. The main aspects of digital literacy are considered to be: digital consumption - active use of the Internet, online media, social networks, public services, telemedicine and cloud technologies; digital competences – the ability to search for information, use digital devices, social networks, conduct financial transactions and online purchases, and create multimedia content; digital security - ensuring protection of personal data, use of reliable passwords, legal content and information storage.

Digitization affects not only the content of education, but also, to a greater extent,

the technology of organizing the educational process itself, so we can say that the specifics of the use of digital technologies, which in the modern virtual socio-educational environment are not only an object of study, but also a means of learning, are affected and means of communication. Digitization and computerization of the educational process is characteristic for the implementation of both managerial and educational functions of education.

#### References:

1. Bykov V.Yu., Spirin O.M., Pinchuk O.P. Problems and tasks of the current stage of informatization of education. <https://lib.iitta.gov.ua/709026/1/%D0%9F%D1%80%D0%BE%D0%B1%D0%BB%20%D1%82%D0%B0%20%D0%B7%D0%B0%D0%B2%D0%B4%20%20%D1%96%D0%B-D%D1%84%D0%BE%D1%80%D0%BC%D0%B0%D1%82%D0%B8-D0%B7%D0%B0%D1%86%D1%96%D1%97%20%D0%BE%D1%81%D0%B2%D1%96%D1%82%D0%B8.pdf>
2. Gurevich R. S. Information and telecommunication technologies in the educational process and scientific research: teaching. manual for students ped. Universities and students of postgraduate institutes. of education / R. S. Gurevich, M. Yu. Kademiya. K.: Education of Ukraine, 2006. 390 p. [https://lib.iitta.gov.ua/706445/1/%D0%94%D0%B8%D1%81%D0%B5%D1%80%D1%82%D0%B0%D1%86%D1%96%D1%8F\\_%D0%AF%D1%81%D1%82%D1%80%D0%B5%D0%B1%D0%BE%D0%B2\\_%D0%9C\\_\(3\)\\_-\\_%D0%BA%D0%BE%D0%BF%D0%B8%D1%8F%20\(1\).pdf](https://lib.iitta.gov.ua/706445/1/%D0%94%D0%B8%D1%81%D0%B5%D1%80%D1%82%D0%B0%D1%86%D1%96%D1%8F_%D0%AF%D1%81%D1%82%D1%80%D0%B5%D0%B1%D0%BE%D0%B2_%D0%9C_(3)_-_%D0%BA%D0%BE%D0%BF%D0%B8%D1%8F%20(1).pdf)
3. Demyanenko V.M. Features of teacher training for the use of electronic resources. № 8 (39) /08/2015 <http://otr.ioid.gov.ua/images/pdf/2015/8/06.pdf>
4. Melnyk Y. Experience of Theory and Practice of the Process of Implementing Information Technologies in the Educational Environment. IJCSNS International Journal of Computer Science and Network Security, VOL.21 No.4, April 2021 [http://paper.ijcsns.org/07\\_book/202104/20210411.pdf](http://paper.ijcsns.org/07_book/202104/20210411.pdf)
5. Tkachuk S. Technological Aspects of the Use of Modern Intelligent Information Systems in Educational Activities by Teachers. IJCSNS International Journal of Computer Science and Network Security, VOL.21 No.9, September 2021 [http://paper.ijcsns.org/07\\_book/202109/20210912.pdf](http://paper.ijcsns.org/07_book/202109/20210912.pdf)

## FORMATION OF PROFESSIONAL COMPETENCE OF DESIGN AND DECORATION WORKS' SPECIALISTS IN GRAPHICS EDITORS

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**Annotation.** *The article analyzes the role of information and communication technologies in the modern conditions of educational development at the lessons of practical training of design and decoration works' specialists. The necessity of gaining skills in graphic editors and new competencies acquisition, which will meet the requirements of employers and modern industry, according to the new state educational standards is highlighted. The relevance of the problem of forming the ability to coordinate in the information space is emphasized. The concept of «ethnic design» is revealed. The attention is focused on the need to assimilate the material knowledge and spiritual culture of the ethnic group and cultural experience. Folk arts and crafts are considered as a component of professional training of design and decoration works' specialists. The importance of forming a nationally self-conscious, spiritually developed personality in the educational process, the need for highly skilled worker's graphic training, which meets the requirements of the labor market, are indicated. An example task from a graphic design course, as one of the types of advertising products, is given. The sequence of task at the lessons of practical training of design and decoration works' specialists that develops skills in graphic editors is demonstrated. It is determined that the study of the course contributes to the formation of professional competence and skills in working with information and communication technologies. It is substantiated that for the organization of high-quality training of design and decoration works' specialists, there is necessary to introduce a course of computer graphics in the educational process of vocational education institutions.*

*The aim of the study is the experimental verification of the levels of professional competence of future skilled workers in the delivery of art services. The results of the survey of design and decoration works' specialists, as participants of the course to obtain data on the verification of the initial and final levels of professional competence of work in graphic design programs are presented. The verification of the formation of competencies of work in graphic design programs, which was carried out at the initial stage, showed that the professional competence level among design and decoration works' specialists is low. The verification of the level of formation of professional competence at the final stage showed the effectiveness of the course.*

**Keywords:** *information and communication technologies, professional training, promotional poster, colour, graphic editor, image, design.*

In the modern information society, successful professional training depends on the ability of the specialist to obtain, analyze, critically evaluate, use a continuous flow of information in professional activities and create a new information product. The effectiveness of the formation of professional qualities and skills significantly depends on the implementation of innovative educational technologies. Practical activities are aimed at developing research skills among specialists and the ability to navigate in the information space. The relevance of the problem is to form the ability to analyze, work out and systematize the necessary information in the project activities of professional orientation [1].

The purpose of the article is the theoretical and practical substantiation of the use of information and communication technologies and the need to gain cultural experience and the development of national consciousness of design and decoration works' specialists in the work in graphic editors.

In the modern education, it is primarily about understanding the role of one's national community, the perception and rethinking of the cultural experience of the ethnic group, the need to assimilate knowledge of material and spiritual culture. The formation of professional competence of performers of design and decoration works' specialists by means of ethnic design is a process of formation of art knowledge, skills and abilities of making products using the means of composition, which are characteristic of a particular nationality.

The concept of «Ethnodesign» is used relatively recently, but quite often in modern society. The very concept of «Ethnodesign» consists of two words: «ethnos» and «design». «Ethnos» (from the Greek - tribe, people) - a group of people who have united as a result of long-term coexistence in a certain area. This group is characterized by a single language, common culture and self-awareness. The modern interpretation of the concept of «ethnos» is a historically formed circle of people who have social integrity and a peculiar individual stereotype of behavior [2].

Personality under the influence of many factors (ethno pedagogical, historical, political, social, art, etc.) perceives and transforms in his mind ethnic stereotypes through the prism of the national image of the world.

With the influence of globalization, the expansion of borders, the spread of fashion trends and styles, national traditions are lost in contemporary art. Designers need to come to an understanding that ornaments with characteristic bright national features are simplicity and restraint combined with art perfection of decorative finish.

In modern conditions, thanks to the activation of intercultural and interethnic communication, the role of the ethnic component in cultural and social processes is especially increasing, interest in national identity is reviving, hence the desire to bring into everyday life new elements and the principles of space organization.

Style is a defining, attributive feature of a particular ethnic group. Its development

is connected with the creation of statehood, national consciousness, ethnic culture. Ethnos in its most concentrated form has always been embodied in symbols and attributes. Attributes, fixing ethnic history, connect separate sub-ethnic formations with the modern layer of national culture and its origins.

Ethnodesign is the transformation of elements of national culture, in particular decorative and applied arts (forms, ornaments, colors, traditional techniques, etc.) into modern industrial products [3].

It is national design that is an ethnoculturally oriented form of economically profitable, functionally reliable, ergonomically convenient, ethnically unique and aesthetically attractive industrial products for the purpose of its reproduction in technological processes and advertising on modern Internet networks [4].

Folk arts and crafts in Ukraine are an integral part of Ukrainian culture, they have absorbed the features inherent in certain ethnographic regions of the country. From generation to generation passed the secrets of technical and technological skills, improved methods of processing natural materials [5].

In works of folk art with the use of plastic means in various materials, the depth of philosophical thought, the mood of emotions, the worldview are conveyed, a certain idea, a specific image is embodied.

An important component that ensures the learning process and contributes to the formation of professional competence is the development of the creative potential of design and decoration works' specialists by means of folk art [6].

Today, more and more often, designers use elements of folk art in their work: paintings, ceramics, carving, embroidery, Easter painting, reviving national traditions and reflecting the soul of the people.

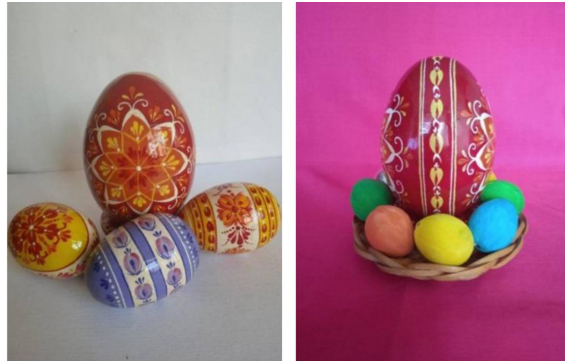
The Petrikivska paintings are a unique form of folk art in Ukraine. Its patterns are used in decorating wood products, for painting fabrics and textiles, book graphics, poster art, etc. The Petrikivska paintings are a calling card not only of the Dnipropetrovsk region, but also of the whole Ukraine, «a symbol of the land, a symbol of the nation».

The works are characterized by amazing decorativeness, brightness, elegance and originality. The painting contains magical flowers, viburnum berries, winding garlands, fantastic birds (Fig. 1.).



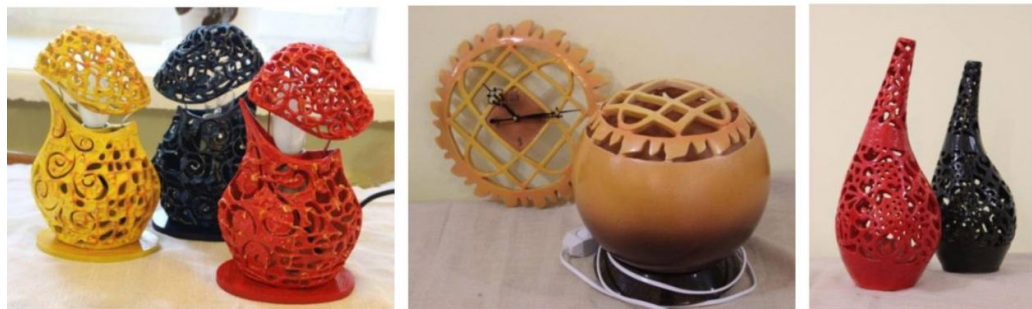
**Fig. 1. The Petrikivska paintings**

Easter painting is a unique Ukrainian cult art. Today, Easter painting has survived and developed thanks to folk artists in many centers of this art. The original ornament of Easter eggs (Fig. 2), not only fascinates with its sophistication, miniature, harmony of color, it carries ancient symbols of worldview and nature, unites with the tradition of the past [7].



**Fig. 2. Easter painting**

Traditionally, ceramics have always been in the life of Ukrainians. Masters of ceramics developed and multiplied folk traditions. Today, ceramic crafts exist in Vinnytsia, Kolomyia, Kosovo, Mukachevo, Odesa, Opishnya, Uzhhorod, Cherkasy and other cities and villages of Ukraine (Fig. 3).



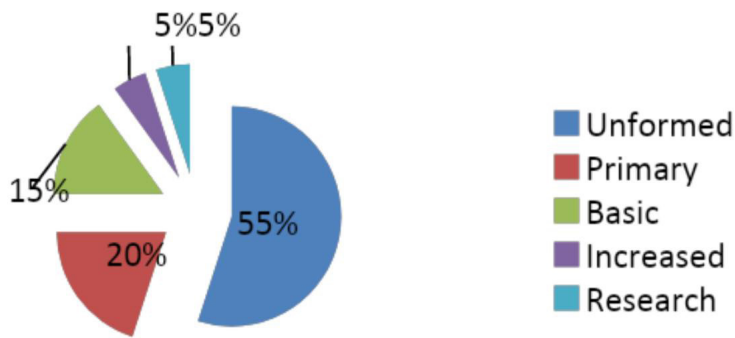
**Fig. 3. Ceramics**

In the modern educational process in the era of the information society all over the world, the most important is the study, preservation and development of folk traditions, the heritage of national culture.

A graphic design course was opened to develop skills in Adobe Photoshop and Adobe Illustrator. Before the start of the course, a survey was conducted in a group of graphic designers in order to determine the level of competence in working in graphic design programs with the following results. (Fig. 4). 120 students took part in the survey.



Questions to check the level of professional competence were: Did you have experience in creating advertising products in graphic editors before studying the course? What was the most interesting? Would you like to improve your design skills? Will you use the skills of graphic design programs in your professional activity? What should be changed to make the course more effective?



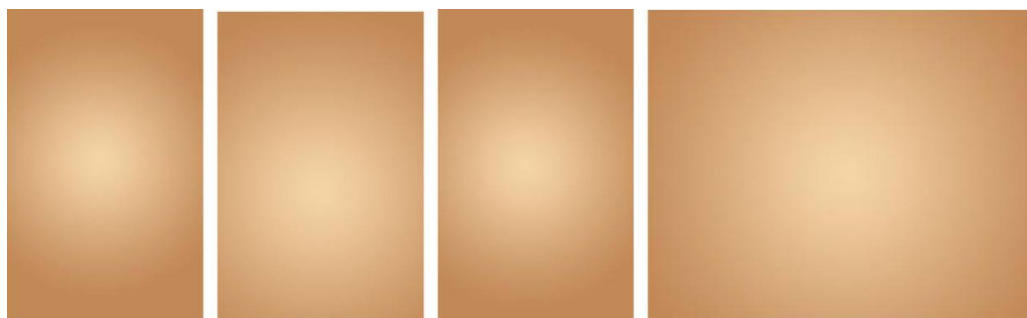
**Fig. 4. Levels of formation of professional competence of work in graphic design programs (initial stage)**

Practical lessons of the course on the development of skills in creating advertising in graphic editors were conducted by the practical instructor in the Higher art vocational school № 5 workshops. The task of practical training for designers was to create a variety of advertising products. As a credit assignment, in order to check the formation of the competencies of work in graphic editors, a group of designers is given the task of creating an advertising poster «Spirit of the tribe». In order to use digital technologies during the practical lessons of graphic designers, in the Higher Art Vocational School No. 5 workshops, the practical instructor chose a form of step-by-step work.

The work begins with the creation of a new document. To do this, we select in the menu bar File → Create or create a file from the keyboard using Ctrl + N. In the dialog box for creating a new document, you can select the suggested format samples or set option values to create your own one; choose RGB or CMYK color system and portrait or landscape image orientation. Among the existed samples as an example for parts of the poster we choose the format sizes 1920x1500 pixels, and 1960x1300 pixels, setting the portrait orientation of the image and the format size 1500x1200 pixels with landscape image orientation, the resolution of 300 ppi in CMYK for printed image. After adjusting the document settings, click Create to confirm.

The next step is a background creation for the advertising poster. To do this, we use the Gradient tool. When working with a background background, we choose the radial one from the five types of gradient. The direction of the gradient is set by drawing a line, the length of which indicates the length of the background color transition for all parts of the advertising poster.

On the settings panel of the instrument there is a current sample of the gradient, clicking on it we open the window Gradient Editor and where we can create our own sample of the color gradient: grayish-orange → light orange (Fig. 5).



**Fig. 5. Background creation**

For the task, as an example, there were selected images from the life of the American Indians or any other ones (Fig. 6).



**Fig. 6. Selected images**

Continue working on the composition of the poster we move the image file to the document field using the Move tool. The images create a panorama of the American Indian habitat. (Fig. 7)



**Fig. 7. Work with the images**

Next, we use the Darker Color Blending Mode for interaction of image layers with the background (Fig. 8.).



**Fig. 8. Using the Darker Color Blending Mode**

Working on on the task, we move on to the selection of the figure, using a combination of selection tools like Magic Wand, designed to select all areas on the active layer, filled with one color or its shades, and Quick Select.

The Quick Select tool works better with multicolor images. Using the tool, you move with it over the part of the image that should be selected.

In order to move figures from one image to another, we apply the same algorithm using the Move tool (Fig. 9.).

When working with an advertising poster, we use a layer mask for each layer with the image.

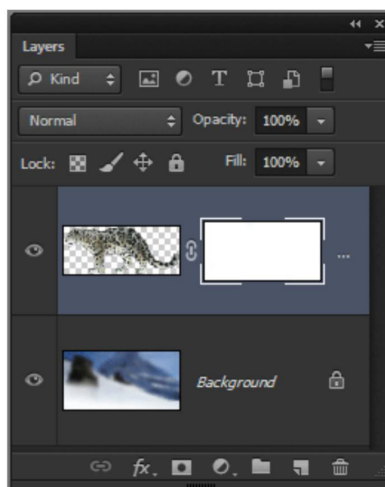
This tool allows you to mask or hide any part of the image or limit the scope of any tool.



**Fig. 9. Work with the figure**

You can add a layer mask to both a layer and a group of layers by clicking the Add Layer Mask button at the bottom of the Layers palette. The display in the Layers palette will change, and a white layer mask thumbnail will appear on the selected layer.

By default the layer mask is white and it means that the whole image is revealed with no changes (Fig. 10.).



**Fig. 10. The Layer Mask adding to the layer with the image**

Depending on the task, by clicking the Add Layer Mask button at the bottom of the layers panel in combination with Alt, we get a black layer mask and in this case the image is hidden.

In the work we can switch both to the layer with the image and to its mask. The switching indicator is the selection frame of a thumbnail with an image or a mask thumbnail in the Layers palette.

The main tool in working with the layer mask is Paintbrush. Paintbrush work with a layer mask is done in black and white, which turns on automatically on the toolbar, as the foreground and background colors. By default, white is the foreground color and black is the background one. In order to swap the colors, use X key. Black color – masks, and makes the layer transparent. Layer mask, by masking parts of the image allows you to not lose pixels and, if necessary, makes it possible to restore the masked parts by changing the foreground and background colors from black to white. When working with the Paintbrush tool, the hardness option with the maximum value gives clear, defined edges of the transition from one image to another. Low values of the option make the edge smooth.

Since the work is done in black and white, except the tool Paintbrush tool, you can work using the Gradient tool to achieve a smooth transition between images.

In order to delete a layer mask, open the menu by right-clicking on the mask thumbnail in the Layers palette and select the Delete Layer Mask command.

The menu command Apply layer mask combines the layer mask with the content and the layer with the image.

The keyboard shortcut Ctrl + I invert the layer mask from white to black and vice versa. For more accurate and detailed work you can switch to the mask mode by clicking on the thumbnail of the mask, in combination with Alt. Clicking on the thumbnail with the image allows you to exit the mode. You can temporarily disable the layer mask by selecting The Disable Layer Mask command from the menu or by clicking on the mask thumbnail in the Layers palette in combination with the Shift key. Clicking on the mask thumbnail will turn it back on.

By selecting an area of the image using the selection tools and adding a layer mask, the image is hidden, leaving only the selected area. The chain icon in the Layers palette allows you to move the image layer and layer mask together. The layer mask with the selection can be moved separately, revealing certain areas of the main image by removing the chain icon.

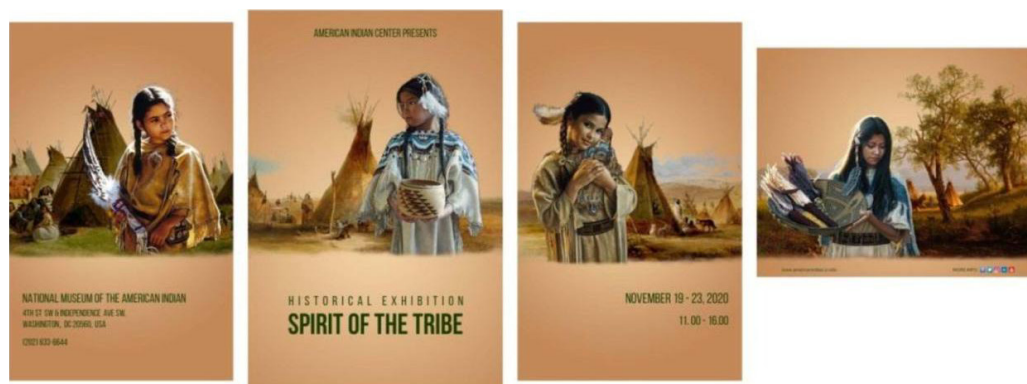
When working with a mask layer, the Properties palette contains certain settings for work. The Density option is adjustable and defined as a percentage from 0 to 100%, allowing you to make the layer mask transparent.

The Feather option allows you to feather the edge of the mask and get it with a blurry edge. The option is adjustable and determined from 0.0 pixels up to 1000.0 pixels. At the maximum value of the Feather option, the layer mask is blurred until it disappears completely.

Using a layer mask in our work, we create a smooth transition between the images and the background, hide unnecessary elements. Since the figures are not complete, a layer mask hides the missing parts and creates a complete look for the images in the work.

We complete the composition of the advertising poster «Spirit of the tribe» with text information (Fig. 11.).

At the end of work, the composition of the advertising poster «Spirit of the tribe» is



**Fig. 11. Work with the text**

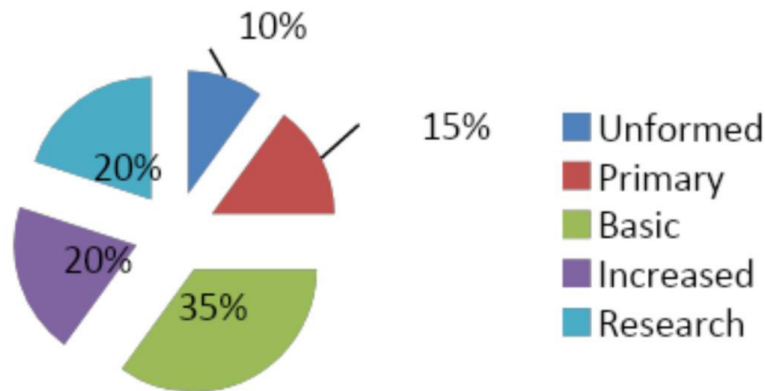
placed on the image of the interior (Fig. 12).



**Fig. 12. The advertising poster «Spirit of the tribe»**

After completing the task, a preliminary assessment is made. Detected errors are corrected by practical instructor.

At the end of the course, a second survey was conducted among the participants with the following results, in order to determine the level of competence formation in creating advertising in graphic editors (Fig. 13).



**Fig. 13. Levels of formation of professional competence of work in graphic design programs (final stage)**

Graphic training in the education of designers promotes the development of critical thinking and the ability to work creatively. The use of information and communication technologies during professional training forms the ability to solve problems, motivates to acquire new knowledge. In such conditions, the importance of developing the skills to create high-quality promotional products to improve the skill level of a specialist is enhanced.

The direction of further research is the study and implementation of graphic training, which makes it possible to achieve a greater result in the creation of high-quality advertising products in the training of design and decoration works' specialists.

#### References:

1. Babkina M., Voloshin M. (2020) Proceedings of the International Scientific and Practical Conference «Modern pedagogy and psychology: promising and priority areas of research». – Kyiv: NGO Kyiv Scientific Organization of Pedagogy and Psychology 6 p.
2. Maksimova Z. (2018) Etnodizayn kak sredstvo formirovaniya khudozhestvenno-tekhnologicheskoy kompetentsii budushchikh uchiteley tekhnologii i pedagogov professional'nogo obrazovaniya Sovremennyye problemy nauki i obrazovaniya № 3 [Electronic resource]. Mode of access: <https://science-education.ru/>
3. Kozak L., Prusak V. (2015) Etnokhudozhni motyvy v dyzayni suchasnoho zhytlovoho seredovyshcha Kontsepsiya suchasnoyi mystets'ko-dyzayners'koyi osvity Ukrainy v umovakh yevrointehratsiyi In: Proceedings of the Fourth International Scientific and Methodological Conference of faculty and young scientists in the framework of the VIII International Forum “Design-Education 2015”, Kharkiv: KSADA [Electronic resource]. Mode of access: <https://ksada.org/doc/confer-15-oct-2015.pdf> 59 p.
4. Dyachenko A. (2020) Osoblyvosti funktsionuvannya natsional'noho dyzaynu u suchasnomu mystetstvi In: Proceedings of the Fourth International Scientific and

Methodological Conference «Modern pedagogy and psychology: promising and priority areas of research». – Kyiv: NGO Kyiv Scientific Organization of Pedagogy and Psychology 10 p.

5. Piddubna O. (2007) Rozvytok tvorchoho potentsialu maybutnikh vchyteliv obrazotvorchoho mystetstva zasobamy narodnoho mystetstva Zb. nauk. prats. Kiev; Cherkasy: “Cherkasy CSTEI” Issue. IV. 132 p. [Electronic resource]. Mode of access:lib.iitta.gov.ua> pxo4.

6. Khudozhni promysly v suchasniy Ukraini yak skladova ukrayins'koyi kul'tury Materialy saytu Osvita.ua Retrieved from <https://osvita.ua>

7. Pysankarstvo Materialy saytu Ukrayins'ki tradytsiyi Retrieved from <https://traditions.in.ua/remesla/pysankarstvo>



## **PHILOSOPHY AND THEOLOGY**

### **NON-CLASSICAL EPISTEMOLOGY OF V. LEKTORSKY**

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**Annotation.** *In disregard for contemporary postmodern thinking the author of the article analyzes the ideas of V. Lektorsky in the context of paradigmatic thinking of non-classical philosophy in the field of epistemology. Particular value lies in a very precise definition of the main features of classical and non-classical epistemology. The mentioned definition allows not merely to understand the limitations of posing problems in classical epistemology, but also to pose problems in non-classical epistemology. In this regard, there is an expansion of the field of study of knowledge and cognition in comparison with the classical epistemology. This requires a revision of a number of philosophical ideas. In this sense, it is namely communication, interpreted both as a dialogue and as rational criticism, which is the main theme of non-classical epistemology. The dialogical nature of thinking leads not only to the transformation of thinking itself, but also expands its nature. As a result, firstly, perception appears as a special form of thinking. And secondly, thinking and experience interact and influence each other so much that there is no sharp difference.*

*Non-classical epistemology comes to rethinking the basis of classical epistemology - the subject. The non-classical understanding of the Self, which is being developed in the philosophy of the 20th century, refuses the understanding of the Self that was formulated by Descartes. Postmodernists conclude that the I itself has disappeared in modern cultures, on the basis of the fact that Self – is the result of communicative relations, postmodernists conclude that the I itself has disappeared in modern cultures. But V. Lektorsky states that communication flows do not dissolve the I. On the contrary,*

*this leads to an increase in the role of creativity, which means an increase in individualization. Thuswise, we are witnessing the fact that, in place of the linguistic turn, modern thought has moved to a cognitive, epistemological one.*

**Keywords:** *non-classical epistemology, extra-scientific form of thinking, critical philosophy, fundamentalism, science-centrism, subject.*

The formation of a philosophical paradigm – is a complex historical process that includes the transformation of all spheres of philosophical thought. It can run diachronically and non-linearly. Accumulation of problems, which cannot be solved on the basis of previous approaches, sooner or later causes a kind of “explosion” of fundamental philosophy, which can be compared with the Big Bang theory in physics, resulting in the birth of galaxies that scatter from each other. The result was the birth of a fan of multidirectional methodological approaches, which fundamentally began to change the attitude not only to the process of cognition, but also to the perception of knowledge as such. As a whole, the right amount of theoretical material was accumulated from the end of the XIX to the end of the XX centuries, which made it possible to speak about the paradigmatic nature of methodologies in non-classical philosophy.

V. Lektorsky is one of the few contemporary philosophers who consciously develops the methodology of the non-classical philosophical paradigm. “However a tendency to distinguish between epistemology and gnoseology can be recorded, in non-classical philosophy, which is based on initial categorical oppositions” (Epistemology, 2020, p. 1). The term itself, introduced by the Scottish philosopher J. Ferrier in the XIX century, gained popularity in the XX century. The active development of different schools of non-classical methodologies began to replace the term “theory of knowledge”. And it is not by chance. If the basis of gnoseology is the opposition “subject – object”, epistemology, in its turn, is based on the opposition “object – knowledge”. That is, it is not the gnoseological subject, which becomes the basis, but the objective structures of knowledge. This leads to the following result: consciousness, “participating in the process of cognition, is taken into account indirectly” (Epistemology, 2020, p. 1).

V. Lektorsky equates gnoseology with classical epistemology. And he even determines the time of the historical and philosophical design of the latter. “I believe that classical epistemology got formed in the XVII century, after a well-known “epistemological turn,” when theoretical-and-cognitive topics became central to philosophy, while epistemology began to play the role of the “first philosophy” (Lektorsky, 2009, page 9). Prior to this, V. Lektorsky notes, it was also developed, starting with Plato, but its development depended on ontological issues. For this purpose, “in my opinion, the way of setting and discussing epistemological problems that arose in the XVII century should be considered classic one” (Lektorsky, 2009, p. 9).

The main difference between the science of Modern times and the science of antiquity is that the facts are not so much described as they are formed, constructed. “Modern scientific thinking, in contrast to scientific thinking in antiquity, arises and develops within the framework of a projective-and-constructive attitude towards the

world” (Lektorsky, 2001, p. 41).

If the main goal of the theory in the ancient world – is the understanding of natural phenomena by proving on the basis of intuitive but true premises, then the scientific thinking of the theoretician of the New Time operates with ideal objects.

Moreover, the experiment is such a method of studying nature, refusing to oppose natural and artificial processes and having a closed system that is controlled by the subject. Thence follows the thesis about the possibility of accurate prediction of the event’s future processes. And if we can predict the processes, then we can own them.

An important consequence of this approach is the sharp opposition between scientific and non-scientific thinking. Namely, if mental formations cannot be reproduced in real or ideal activity, which means that the subject cannot control them, then they must go beyond the limits of science. Such phenomena include ordinary experience or religion. At the same time, it is not just a matter of distinguishing between scientific and non-scientific thinking, namely, only scientific thinking is true perception of reality.

V. Lektorsky draws attention to the fact that the founders of the science of Modern times were religious people according to their personal convictions, but the attitude towards the world that they formed was fundamentally different from the religious one. It is no coincidence that the ideology of scientism has a sharply negative attitude towards all non-scientific forms of thinking.

Contemporary science is shaped by experience in which artificial conditions are formed, when an ordinary person acts in a way, which could never occur in reality. The sharp discontinuity occurs between scientific thinking and the tradition of common sense.

As a consequence, R. Descartes comes to a radical doubt about the existence of everything except the consciousness of the subject. Alternatively, if the consciousness of the subject is able to control the external world, then the need arises to control the consciousness itself. The idea of the Method arises, leading to self-control over mental operations. Namely the latter ones allow you to gain new knowledge. As a result, the main idea of the European philosophy of the New Age is formed, which focuses on the close connection between self-reflection and true freedom. The philosophy of subjectivity determined all the problems of ontology, epistemology and social philosophy. And even all the processes of searching for an objective position are nothing but the reverse side of subjectivity and anthropocentrism. The XX century is a search for a way out of the Cartesian opposition of consciousness and the objective world.

And then V. Lektorsky rightly notes that a way out of this situation is possible only if the value-and-cognitive attitude underlying the technological civilization is criticized. “Rethinking this attitude means a new understanding of man and nature, the rootedness of man in being and in interhuman communications” (Lektorsky, 2001, page 45). It is the new ontology of “I”, which forms a new attitude of man towards nature and which is able to overcome anthropocentrism. As an example, V. Lektorsky points out the ideas of co-evolution by M. Moiseev. As a whole, the line of thought is correct, but still has its limitations, because the dialogism between human and nature is limited and it is not

tantamount.

In designing non-classical epistemology, V. Lektorsky points out the special significance of I. Prigozhyn's "philosophy of instability". The latter holds a viewpoint that classical or traditional science is based on the idea of stability, order, balance and homogeneity of closed systems with linear relations. But this is a rather small part of reality. Most of reality is unstable, not ordered, non-equilibrium, non-linear. However, most of the systems of the Universe are not open systems. At the turning points it is fundamentally unrealistic to foresee the configurations of these systems (bifurcation points). At the same time, the influence of random, single events is interpreted differently. It is the latter ones, and not universal laws, that are able to determine the future in such unstable systems. Of course, the operation of universal laws is not canceled in situations of equilibrium and stability.

A very important aspect for epistemology is the analysis of the psychological basis of perception. Thus, V. Lektorsky points out Gibson's psychological concept of perception. Based on the experiments of the latter, "perception is not a process "inside" the subject, but a method of the subject's action in the world" (Lektorsky, 2001, p. 49). The fundamental idea, which V. Lektorsky draws attention to, is that a new approach to the study of perception is possible only if we manage to renounce associating the structure of reality with the image, provided by modern natural science and specifically by physics. And the point is not that it is deceptive, but that it is a level of reality with which a being (animal or human) has no specific connection. The ontology of the environment resembles an anti-scientific everyday consciousness.

The development of experimental psychology by Freud, Wundt, Watson was based on the approach of classical experimental natural science. But L. Vygotsky and A. Leontiev found that such an approach was confirmed only occasionally. And in the 50s and 60s, W. Allport, A. Maslow, K. Rogers, R. May proceeded from the position that psychology is not a science, based on those scientific positions that were formed as the ideal of knowledge.

Reflecting on the relationship between science and religion, V. Lektorsky draws attention to the fact that classical physics laid down the certainty of all future movements in the Universe, through the laws of mechanics. Thuswise, this approach excluded the meaning of the Holy Spirit's idea, as well as the creative volitional beginning of the human person. "From the point of view of V. V. Mityugov, one may speak of a profound antagonism between the pagan ancient Greek model of rational cognition (underlying the entire modern natural science) and the Christian foundations of the moral structure of life. Hence follows the statement of Laplace that in natural science it is quite possible to do without the hypothesis of God" (Lektorsky, 2001, p. 53). This means that scientific psychology is in the same incompatible state with regard to Christian religious ontology. Scientific psychology does not allow room for the soul and spirit, Starting from the experimental psychology of W. Wundt (behaviorism), ending with modern cognitive psychology.

In this sense, the collective monograph "Principles of Christian Psychology" is

considered an event, the monograph states: “The history of scientific psychology is a history of losses, the first and main of which was the loss of the soul” (Principles of Christian Psychology, 1995, p. 4). At the same time, researchers pay attention to the fact that the means of religious knowledge turned out to be more objective and accurate than scientific ones, in relation to the spiritual world. Therefore, it is noted that the ontology of Christian psychology cannot be morally neutral, unlike classical science. Its methodology is not an individually realized cognition, it is jointly (synergistically) united with Christ.

V. Lektorsky highlights the essential features of classical epistemology. One of the first features is criticism. Any attainments must be substantiated. It is the topic of justification that has taken a central place in Western European philosophy since the XVII century. From this time on begins the criticism of classical metaphysics. “For F. Bacon and R. Descartes, this is a critique of scholastic metaphysics and peripatetic science” (Lektorsky, 2009, p. 10). D. Berkeley criticized Newton’s ideas of absolute space and time. The critical epistemology of I. Kant is aimed at proving inconsistency of the mentioned theory in relation to ontology. The positivists used the epistemological principle of verification to criticize not only philosophy, but science as well.

Fundamentalism and normativism are the next peculiarity of classical epistemology; that is, knowledge must have a foundation about which there is no doubt. Thus, epistemology has been used as a means of legitimizing or asserting knowledge.

According to V. Lektorsky, the next feature is subject-centrism: “For empiricists, such an undeniable status is possessed by the data in my mind – sensations. For rationalists, these are a priori forms of consciousness of the subject” (Lektorsky, 2009, p. 10).

Science-centrism. Epistemology became classical precisely once science had emerged. And hence it was science that became the measure of Truth. That is why “Kantian epistemology can be understood as a justification for classical Newtonian mechanics” (Lektorsky, 2009, p. 14). But it is Kant, from the point of view of the metaphysics’ existence, who “is trying to show that the latter is impossible” (Lektorsky, 2009, p. 15). And therefore it is namely Kant who proves its limitations, at the pinnacle of classical epistemology. And so, for neo-Kantians, epistemology is possible only as a theory of science.

In this regard, the field of studying knowledge and cognition is expanding, compared to classical philosophy. This requires a revision of a number of philosophical ideas. V. Lektorsky points out that the classical approach of epistemology fundamentally interprets knowledge as a factor of power over nature and control of social processes. “But another approach towards knowledge is also possible - as a dialogue between the knower and the known, each of which plays the role of an independent partner” (Lektorsky, 2001, p. 11), as well as building a new type of social practices. In this sense, the main topic of non-classical epistemology is namely the communication, interpreted simultaneously as dialogue and as rational criticism.

When it comes to rethinking all the elements of classical psychology, V. Lektorsky has an interesting section on thinking and experience. Analyzing the methods of thinking

on the basis of classical empiricism, he formulates a very important thesis from the point of view of the non-classical epistemology's formation: "...attempts to consistently implement the concept of empiricism failed: it turned out that experience itself and the activity of processing it (in particular, induction) presuppose non-experiential components" (Lektorsky, 2001, p. 139). And even rationalism, in turn, refers to experience as "dark" knowledge, a kind of impulse to thinking that reveals the empirical content of "innate" ideas.

Kant's approach has a special position towards empiricism and rationalism. First of all, he distinguishes perception and experience. At the same time, perception does not presuppose thinking. The task of perception is to organize sensations by means of a priori forms of space and time. On the other hand, experience is "possible only on the basis of the introduction of a priori categories of reason to sensory perception, i.e., it is the result of the constructive activity of thinking" (Lektorsky, 2001, p. 140). Thus, thinking is a kind of fusion of the a priori and the empirical notions.

The creative development of this idea is available in the works by E. Husserl. True thinking is given only to the subject in the act of experiencing, that is, feeling. The phenomena of experience are constructed by the structures of transcendental consciousness so that the structures of thinking can be directly contemplated.

And, finally, modern cognitive psychology does not allow distinguishing the pure content of experience. Therefore, first of all, perception acts as a special form of thinking. And secondly, thinking and experience interact and influence each other so much that there is no sharp difference. "Any experience suggests unusual mental schemes. On the other hand, even in such non-experiential sciences as mathematics (cited as an example of "pure" a priori thinking) there are guesses, hypotheses, rejection of what seemed unquestionable" (Lektorsky, 2001, p. 141).

Therefore, according to the thought of V. Lektorsky, who in turn follows Kant, perception is a special form of thinking, which does not depend on the conscious activity of the subject. It was on this basis that Kant identified two forms of thinking – reason and understanding. Reasonable thinking – is a synthesis of sensual perception. Rational thinking – is a synthesis of the transcendental world's ideas (the God). The latter ones can be neither the subject of empirical experience, nor the subject of a priori experience. Therefore, thinking has its own limit. Thus, the possibility of thinking is determined by the conceptual framework of culture, history, science – paradigms (Kuhn) or episteme (Foucault).

Further V. Lektorsky notes: "... to date, it has become common opinion in cognitive science, that at an unconscious level, a person carries out many different types of mental activity: putting forward and testing hypotheses, reasoning, interpretation, etc." (Lektorsky, 2001, page 146). Regarding the unconscious level, the researcher observes that this is not about the physiological processes occurring in neurons, but rather mental ones, emphasizing that there is only part of the thinking that is conscious. That is, the saying "I think" is reflective. But it does not tackle the reflection of images of thinking.

“The latter is possible on the basis of the statement “I think that I think” (Lektorsky, 2001, p. 146). Reflection of similar degree can be called thinking about thinking or critical thinking. The rest is objectified in the form of texts or by other means of external implementation. The latter of the mentioned is the norm of thinking, according to classical philosophy (Absolute Spirit of G. Hegel).

Today it is already clear that reflection on thinking can never be completed, if only because it is historical in nature. And as for the processes of thinking on the unconscious level of the individual, it can be said that similar thinking is not recognized by the individual himself. Although namely these processes can become the subject of research by a specialist in cognitive science.

In this sense, non-classical epistemology comes to rethinking the basis of classical epistemology – subject. As it is known, the word subject originates from lat. *subjectus* – what the basis is. Moreover, B. Lektorsky notes that the whole problematics of the subject in classical philosophy is identical to the center of consciousness. At the same time, empiricists did not see the independent beginning of the existence of Self. Transcendentalists distinguished between empirical and transcendental Self, and therefore – they differentiated Subject as well. Modern philosophy, as a rule, implies a specific individual by subject. In this sense, the subject acts as I, in relation to another individual. As a social phenomenon, in addition to an individual, a collective subject is distinguished as a carrier of the norms of activity of collective consciousness.

According to V. Lektorsky, the basis for understanding self-awareness is “not awareness of consciousness, but the perception of one’s own body and its place in the system of other bodies and events of the physical world”, in the non-classical theory of cognition. (Lektorsky, 2001, page. 169). And this is not the structure implied by phenomenology. “The subject looks at the arms, legs and other parts of the body, hears and sees proper steps, hears the sounds of proper voice, feels the movements of his limbs and head, receives various kinds of information from all parts of the body” (Lektorsky, 2001, p. 169).

Secondly, the act of reflection requires that Ego makes an object of him- or herself. As a result of such self-perception, Ego turns into an Ego-concept, a theory. Moreover, this – is not just knowledge that it exists, it is also a means of critical rethinking and transforming the Ego itself. “If for Kant and Fichte the highest principle of self-awareness was the position “I = I”, then from the point of view of modern understanding, reflection aimed at Ego serves as a way to change self-identity (Lektorsky, 2001, p. 170).

The non-classical understanding of Self, developed in the philosophy of the 20th century, refuses the understanding of Self, which was formulated by Descartes. At the same time, it is important to emphasize that this does not mean giving up the problem. The Self is understood as an expression of fundamental dependencies associated, firstly, with the inclusion of a person in the world of objects and situations through his body, and secondly, with a person’s attitude towards other people, among other things, through communication» (Lektorsky, 2001, pp. 176-177). V. Lektorsky notes that the non-classical interpretation of Self possesses such features as:

1) embodiment of Ego. This one opens up the phenomenon of the Ego's self-experience for philosophy. Unlike classical philosophy, acts of individual consciousness are identified upon condition of their correlation with a particular individual. That is, without the human body, Ego does not exist (Popper, Eccles, 1981).

Thus, Piaget believes that at the first stages of psychological development, the child merges with his body. She does not form an attitude towards herself from a distance, that is, as if she would act for someone's part (Piaget, 1951). E. Husserl draws attention in his later works, to the fact that "the objective structure of experience is constituted through the attitude towards the individual's body and his unique position" (Lektorsky, 2001, p. 177). Zh.-P. Sartre asserts that the knowledge of empirical consciousness is inseparable from the experience of the proper body. At this stage, the subject does not exist as an Ego. The emergence of the Ego means a break with direct experience (Sartre, 2000). "As shown in modern psychology, in particular, in the works of J. Gibson (Gibson, 1988) and V. Neisser (Neisser, 1981), the subject's perception of his body, its position among other objects of experience, and the perception of external bodies of objects and events mutually presuppose and complement each other" (Lektorsky, 2001, p. 178).

2) incomplete self-evidence of Ego. For classical philosophy, self and consciousness are not only self-evident, but they are also the only unquestionable thing. This does not mean that there is doubt in the existence of the Self. "But for a non-classical understanding of the Self, consciousness is not a separate world, the whole meaning of consciousness consists precisely in the orientation in external reality, and if the subject's understanding of his experiences from the point of view of attributing them to reality turns out to be erroneous, then this also means erroneous judgments of consciousness, and thus about oneself, because outside of these states the Ego does not exist" (Lektorsky, 2001, p. 179).

Z. Freud's psychoanalysis substantiates that the Self does not know the deep state of its own psyche at all, since their mechanism belongs not to consciousness, but to the subconsciousness. In modern philosophical and psychological literature, the polemic about possible forms of Ego's self-deception continues.

That is, according to V. Lektorsky, for the non-classical approach Ego doesn't rank among the primary data. It is formed under conditions, which are particular enough, during interaction of an individual with other people.

When Descartes stated: "I think", he usually asserted the fact of existence, but on the other hand, he identified this fact with consciousness. However, this solitary subject of classical philosophy cannot say this without connection to the world, because the self-statement is an act of self-reflection. And this is possible only under condition that Ego is capable of approaching himself from the standpoint of another person. Moreover, this "other person" is generalized thanks to which Ego is able to think about its past and form its future (I-concept).

This is what becomes the subject of non-classical philosophy. "So, for example, J.P. Sartre emphasizes that the Self is not only alien to the nature of individual consciousness (which merges with its body in its subjective givens), but also in a certain sense distorts its characteristics" (Lektorsky, 2001, p. 180), since the consciousness in itself is free, and



the Self always limits this freedom to the specific characteristics of a given individual. As a result, knowledge about the Self is not capable of giving complete knowledge about a human as such.

But even the Ego itself is dynamic, constantly changing its image, as a person lives in specific communities. M. Bakhtin emphasizes that the self-perception of the Ego (I for myself) differs from the individual's perception by the second self (I for the other). And it is possible to become a full-fledged Self only when the attitude towards oneself is taken into account, from the point of view of another person. "All types of the life of consciousness, including rueful feelings, thoughts, self-image, presuppose an attitude to oneself as if from the outside, i.e. from the point of view of another person" (Bakhtin, 1979, pp. 43-50).

The contemporary American philosopher and psychologist R. Hare claims that Ego is a product of particular communications, and therefore it has a discursive nature. Ego is not a subjective experience, but a unique theory, formed by culture. "In our culture, it has three functions: A. Expresses the formal unity of consciousness, plays the role of its center; B. Characterizes unity and continuity of individual life, biography; B. Finally, it embodies the agent of actions carried out on the basis of freely made decisions" (Lektorsky, 2001, page 181). What is more, any function can be internalized only on the basis of free decisions. After all, "the modern self is a fragile formation, possible only in certain cultural and historical conditions (Mikhailov, 1964; Kon, 1979; Lektorsky, 1980; Taylor, 1989)".

It is quite an interesting thought by V. Lektorsky, regarding post-non-classical approaches to the understanding of the self. Yes, one of the functions of the self is to ensure the unity of the biography. And this is possible not only through the agency of individual memory, but also with the help of texts. In this case, Ego exists not only bodily, but as a "file I" that can exist simultaneously in different places.

Postmodernists conclude that the Ego itself has disappeared in modern cultures, on the basis of the fact that the Ego is the result of communicative relations. The argument is the "fragmentation" of consciousness and the destruction of traditions and the hierarchy of values. Ego is not even the author of the proper actions. It is only a reaction of the communication systems in which the individual is included, and hence the problem of self-identification makes no sense.

But V. Lektorsky believes that communication flows will not dissolve the Self. On the contrary, it leads to an increase in the role of creativity, which means an increase in individualization. Of course, contemporary culture requires other means of identification, hence it forms other types of personality, but it is not correct to talk about the disappearance of Ego.

**Conclusions.** V. Lektorsky states that in the last decades of the XX century non-classical epistemology begins to form. The following peculiarities are characteristic of the latter:

1. Rejection of absolute criticism. That is, knowledge does not start from scratch. Moreover, the basis of knowledge is faith as a logical form of the existence of knowledge.

“The attitude of distrust and the search for absolute self-reliability is replaced by the attitude of trust, in the results of the activities of others as well, because without it, no collective activity, including cognitive activity, is possible - especially in modern “big science” (Lektorsky, 2009, p.16).

2. Rejection of fundamentalism. Positivist attempts to separate knowledge from ignorance led to defeat. This results in the impossibility of absolute substantiation of knowledge.

3. Rejection of subject-centrism. The subject is a product of communication. In this regard, important ideas were expressed by the outstanding domestic psychologist L. Vygotsky, according to whom the inner subjective world of consciousness can be understood as a product of intersubjective activity, including communication. Thus, subjectivity turns out to be a cultural-and-historical product. (Lektorsky, 2009, p. 19).

4. Rejection of scientific centrism. The classical version of epistemology precedes all other branches of science in the system of the tradition of the classical philosophical paradigm. Moreover, it justifies science itself. But, on the other hand, V. Lektorsky rightly notes that criticism of classical epistemology is accompanied by attempts to abandon epistemological problematics. Thus, some variants of “social epistemology” reject the asymmetry of knowledge and delusion. As a result, the competition occurs not for the purpose of searching for the truth, but for the purpose of obtaining power. Similar rejection of epistemology, as well as of philosophy, is implemented in postmodernism. “Linguistic turn”, which occurred as a result of the analytical philosophy of 1950-1970, in its essence, actually liquidated epistemology, according to V. Lektorsky. The latter of the two was replaced by the philosophy of language. As a result, everything that is not subject to verbal expression for philosophy becomes non-existent.

Nevertheless, the peculiarity of the XX century, according to V. Lektorsky, is that: “... the “linguistic turn” was replaced by a “cognitive and epistemological turn” (Lektorsky, 2009, page 23). Which means that epistemology is not interested in the relationship between text and discourse. It’s so, because the latter may not be related to knowledge, while knowledge itself, which may be present in the text, could be explicit or implicit. Which means that the modern philosophy of speech does not precede epistemology, as it claimed from the beginning. This makes it possible not to fall into the new circle of modern scholasticism.

#### References:

1. Bakhtin M (2003) Volume 1. Philosophical aesthetics of the 1920s. Publishing House: Russian Dictionaries Languages of Slavic Culture. [https://royallib.com/book/bahtin\\_mihail/tom\\_1\\_filosofskaya\\_estetika\\_1920\\_h\\_godov](https://royallib.com/book/bahtin_mihail/tom_1_filosofskaya_estetika_1920_h_godov)
2. Wertheimer M. (1987) Productive thinking: Translation from English/gen. ed. By S. F. Gorbov and V. P. Zinchenko. Intro. Art. V. P. Zinchenko. M.: Progress 1987. 336 p. <https://studfile.net/preview/5247681/>
3. Wundt W. (2007) Introduction to psychology. M.: KomKniga. 168 p.
4. Vygotsky L. S. (1934) Thinking and speech <https://www.marxists.org/russkij/>

vygotsky/1934/thinking-speech.pdf

5. Gibson J.J. (1988) Ecological approach to visual perception. M.: Progress. 464 p.
6. Husserl E. (2004) The crisis of European sciences and transcendental phenomenology: An introduction to phenomenological philosophy. St. Petersburg: Vladimir Dal. 400 p.
7. Descartes Rene (1950) Selected works. Moscow: State Publishing House of Political Literature (Political Publishing House). 712 p. 7. Descartes Rene (1950) Selected works. Moscow: State Publishing House of Political Literature (Political Publishing House). 712 p.
8. Epistemology (2020) File from Wikipedia <https://uk.wikipedia.org/wiki/%D0%95%D0%BF%D1%96%D1%81%D1%82%D0%B5%D0%BC%D0%BE%D0%BB%D0%BE%D0%B3%D1%96%D1%8F>
9. Kuhn T. (2001) Port-royal structure of scientific revolutions <http://litopys.org.ua/kuhn/kuhn.htm>
10. Lektorsky V. A. (2009) On the way to non-classical epistemology [Text] / Ros. acad. Sciences, Institute of Philosophy; Rep. ed. V.A. Lecture. M.: 237 p.
11. Lektorsky V. A. (2001) Classical and non-classical epistemology. Moscow: Editorial URSS. 256 p.
12. Leontiev A.N. (1997) On the question of the consciousness of the doctrine [https://psyjournals.ru/files/2501/psyedu\\_1997\\_n1\\_Leontev.pdf](https://psyjournals.ru/files/2501/psyedu_1997_n1_Leontev.pdf)
13. Lukasevich Ya. (1959) Aristotelian syllogistics from the point of view of modern formal logic. 312 p. <https://ikfia.ysn.ru/wp-content/uploads/2018/01/Lukasevich1959ru.pdf>
14. Maslow A. (2005) Existential psychology – what does it have for us? <https://psylib.org.ua/books/meyro04/txt02.htm>
15. May R. (2001) Existential psychology. (Translated by M. Zanadvorov and Yu. Ovchinnikova). Moscow: April Press & EKSMO-Press, <https://psylib.org.ua/books/meyro04/index.htm>

## HISTORY

### CHANGES IN THE TEACHER AND STUDENT COMPOSITION IN THE NETWORK OF INSTITUTIONS OF HIGHER EDUCATION IN THE KHMELNYCH REGION

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**Annotation.** *The article provides a theoretical generalization and a solution to the scientific problem revealed in a comprehensive and comprehensive analysis of the situation of higher education institutions of the Khmelnytskyi region in the conditions of the Khrushchev «thaw». Some aspects of this problem were studied by Soviet and modern Ukrainian scientists. Many unsolved issues related to the educational, scientific and socio-political activities of the institutions, as well as their financial situation, remained beyond their attention. A lot of attention was paid to the aesthetic education of students, which was carried out through the student club, within the framework of which students engaged in stage activities, various sports, tourism, etc. in their free time from studies.*

**Keywords:** *universities, teaching staff, pedagogical workers, material base, library.*

After the death of J. Stalin, Soviet society experienced a period that the Soviet writer I. Ehrenburg called a «thaw». When M. Khrushchev came to power, important political and economic measures aimed at eliminating the negative phenomena associated with the Stalinist regime began to be implemented.

Partial liberalization of the Soviet regime began. It somewhat improved the conditions for the development of culture as a whole. In 1953, the transition to compulsory seven-year education was made, and in 1956, tuition fees in senior classes were abolished. At the same time, there was not enough school premises. A third of the schools held classes in two or even three shifts.

In April 1959, the Verkhovna Rada of the Ukrainian URSR adopted a law on reforming school education. Instead of a seven-year compulsory school, an eight-year school was organized, which provided students with general education and technical knowledge. This law gave parents the right to choose the language of instruction for their children and was actually used to Russify Ukrainian schooling.

At the end of the 50s, the organization of boarding schools began, where orphans, disabled children, low-income parents and single mothers studied.

In the post-war years, the reorganization of higher educational institutions was carried out, the number of which was reduced, although the number of students increased.

General technical and general scientific faculties were organized on the basis of higher education institutions at large industrial enterprises and in places of concentration of correspondence students. Almost half of the students studied in correspondence and evening classes, which in general had a negative effect on the level of professional training. The disadvantage of the educational process was its excessive ideological orientation [1].

In 1962, the Khmelnytskyi General Technical Faculty of the Ukrainian Polygraphic Institute named after I. Fedorova. The establishment of this institution was conditioned by the fact that Khmelnytskyi is the only regional center without a single higher education institution. In addition, there was no technical university in the region. Although the reasons for creating an institution of such a profile were strong. Large industrial enterprises worked in the Khmelnytskyi region – the Poninkiv pulp and paper mill, the Slavutsky plant «Budfayance», the Khmelnytskyi transformer substation plants, «Traktorodetal», the forging and pressing equipment plant, the Krasylivskyi plant of lifting and transport equipment, sugar factories, a network of construction and construction assembly organizations, etc [2].

The Kamianets-Podilskyi State Pedagogical Institute, which was reorganized from a teachers' institute in 1948-1949, continued to work. Former party worker I. Zelenyuk worked as the director (rector) of the university from January 30, 1947 to December 5, 1966, who did a lot to strengthen the material base of the university, raise the level of educational and scientific work. In 1953, the pedagogical institute had three faculties – historical and philological, physical and mathematical, physical education and sports. In the mid-1950s, another wave of repressions took place in the institute, as in the whole of Ukraine. This resulted in the closure of the history departments in the Zhytomyr, Nizhyn and Chernivtsi Pedagogical Institutes. The historical department of the Kamianets-Podilskyi Pedagogical Institute, which was liquidated in 1956, did not escape this fate. Neither numerous reasoned letters and telegrams, nor the rector's personal requests to the Council of Ministers of the USSR and high party bodies helped this. Fourth-year students were sent to work, and students of I-III years were transferred to the Stanislav Pedagogical Institute. At the same time, the specialty «History» was not completely deleted from the list of specialist training, but was organized as an additional one to be mastered by students of the Faculty of Philology. On the one hand, this approach expanded the possibilities of future specialists, on the other hand, it helped to retain most of the history teachers. At the same time, additional specialties were introduced at other faculties. Thus, future mathematicians mastered the profession of teachers of drawing, physics – industrial training, physical education – human anatomy [3, p. 128-129].

In the spring of 1960, the fourth faculty was opened at the institute – the faculty for training elementary school teachers. Its organizer was the first full-time teacher B. Lipman, who, on behalf of the directorate of the Pedagogical Institute, studied the organization of the educational process at the faculty of the same name of the Vinnytsia Pedagogical Institute. The first teachers of the newly created unit were teachers of the Ukrainian language M. Stefantsev, psychology – M. Sakovska. The first of them was appointed to perform the duties of the dean of the faculty. The following year, this position was taken

by F. Petlyak, who finished writing and submitted his candidate's thesis for defense. In order to ensure the teaching of the cycle of special subjects in 1961, the department of pedagogy and methods of primary education was organized at the faculty headed by Z. Varbanets. Its members included A. Durytskyi, T. Kydalova, V. Rumbach, I. Sadugin. In addition, the subject commission of music and singing functioned. It was composed by B. Lipman (head), V. Ponter, L. Radomska, O. Savron, V. Sudareva, S. Fedorchuk, and V. Shcherbakova [4].

The studies began in the building located in the courtyard of the current Faculty of History. Special classrooms for natural science, language teaching methods, labor training, and mathematics were equipped here, as well as rooms for a choir class and an individual dance class. Every year, 50 people with higher education were admitted to the first course of the faculty. Thorough general education, pedagogical and methodical training, the study of many social science and cultural disciplines caused a large influx of entrants. That is why from 1961-1962 n.r. admission to the correspondence department was increased to 100 people. This caused additional financial difficulties, as we had to use even a wing on the street to ensure the educational process. K. Marksa, 10. Despite this, the team energetically shaped its face and soon took its proper place in the system of training pedagogical personnel [5].

The main obstacle in the selection of highly qualified scientific and pedagogical workers was the lack of housing. There was no free-living space in the institute, and the city did not always meet in this regard, because there were also no reserves. Many teachers who came to work at the institute have been waiting for years for housing problems to be solved. Candidate of medical sciences H. Antoshechkin, candidate of philological sciences E. Korolkova resigned from teaching due to domestic troubles [5].

In connection with the significant staff turnover in the institute, teachers who had experience of working at this institution for no more than 10 years prevailed. For example, in 1962-1963 2 teachers worked at the pedagogical institute for more than 25 years, 10-25 years – 40, 5-10 years – 30, 1-5 years – 40.

The agricultural institute also employed teachers who had extensive experience in practical, scientific and pedagogical work, namely: the head of the department of private animal husbandry, laureate of the State Prize, associate professor M. Gordienko, the head of the department of plant physiology and agrochemistry, associate professor S. Serbin, the head of the department of Marxism – of Leninism Associate Professor I. Zabayrachnyi, Head of the Department of Anatomy and Physiology of Farm Animals Associate Professor V. Goryanov and many others [8, sheet. 259]. At the same time, as in the Pedagogical Institute, most of the teachers had work experience that did not exceed 10 years. Thus, in 1963, 26 teachers had 1 to 5 years of work experience, 46 from 6 to 10 years, 18 from 11 to 15 years, 10 from 16 to 20 years, 4 from 21 to 25 years, 26 -30 years – 4, 31-35 years – 2.

On September 17, 1962, the Khmelnytskyi General Technical Faculty of UPI had 11 teachers and 6 support staff: V. Chekirida, V. Lisnichuk, B. Kufel, K. Chesnokov, S. Ganzhurov, V. Sakun, L. Mitina, S. Tsymbalyuk, O. Kulyk, T. Rutt, V. Pylypiv, I. Tkachuk,

G. Timkova, Ya. Mukhamet, K. Dronova, P. Kolmakov, M. Mil. In September 1964, 18 teachers worked, including 3 candidates of sciences, 1 associate professor, who were divided into two departments – general scientific and general engineering disciplines.

Every 5 years, all teachers went through the procedure of re-election by secret ballot to the positions they held. The competitions concerned all heads of departments and teachers. For example, in April 1963, a competition was held to fill the vacant positions of the heads of the history and Russian language and literature departments of the Pedagogical Institute, as well as 16 associate professors, senior teachers and assistants. At the same time, in the report of rector I. Zelenyuk for 1963-1964 it was said that there are many vacant positions of teachers in the institute. 13 teacher positions were not filled. An abnormal situation arose at the Department of Mathematics, where 4-5 teachers were missing. Difficulties with the staffing of full-time teachers also occurred in the agricultural institute. Here during 1955-1956 n.r. 8 full-time units were not staffed.

In order to increase the professional and scientific-methodical level of the teaching staff, the institutes used the practice of electing candidates of sciences, senior teachers to the positions of acting professors, associate professor, and after a certain time they will be awarded the academic title of associate professor. Before being elected to the position, the following requirements were put forward to each of the applicants: 1) reading lecture courses at a high scientific-theoretical and methodical level; b) conducting scientific research on current problems of relevant fields of science; c) writing and publishing scientific and educational and methodological works; d) popularization of knowledge and best practices.

In higher education institutions, their leaders tried to create a healthy moral and psychological climate that would stimulate effective educational, methodical, scientific and educational work. In the Pedagogical Institute, Rector I. Zelenyuk successfully coped with this. Everyone who worked with him admired his exceptional efficiency and saw increased demands on himself and subordinates. Among teachers, employees and students, they knew about the rector's negative attitude towards any violations of labor discipline, and even more so ideological and moral and ethical norms. His critical remarks and statements were heard more than once against lazy, disorganized and undisciplined workers. But they never had the slightest injustice towards teachers or technical workers. He could not stand insincerity, laziness and laxity. Whoever did not fulfill the manager's instructions in a timely manner, fell into the position of a schoolboy who did not learn the lesson. And, on the contrary, I. Zelenyuk highly valued responsibility, thorough scientific and theoretical training and a conscientious attitude to the fulfillment of assigned duties, willingly supported a healthy initiative.

In leading the team, the rector did not limit himself to the meetings of the rectorate, council or short meetings of the heads of the institute's units, but tried to systematically visit the faculties, departments, and other units, and devoted a lot of time to communication with scientific and pedagogical workers. This helped to form a system of their work, to properly organize each workplace [6].

Simultaneously with the improvement of the quality of the teaching staff, the number

of students increased and the contingent of students also improved. Positive changes in the qualitative composition of student youth took place, on the one hand, due to the increase in the number and share of young men and women who had experience of practical work before studying at the institute, on the other hand, the potential of future specialists improved due to students who studied excellently and well.

The student contingent gradually grew quantitatively. In 1953, 2,474 students studied at the Pedagogical Institute, including in full-time education – 948, in correspondence – 1526, in 1954 – 2913, 1040 and 1873, respectively, in 1955 – 3098, 993 and 2105, in 1956 – 2880, 982 and 1898, in 1957 – 2810, 950 and 1860, in 1958 – 2748, 940 and 1808, in 1959 – 2741, 942 and 1799, in 1960 – 2629, 982 and 1647, in 1961 – 3139, 1048 and 2091, in 1962 – 3575, 1174 and 2401, in 1963 – 3607, 1335 and 2272, in 1964 – 3766, 1472 and 2459.

In the restored agricultural institute at the beginning of 1955, 200 students of the agronomic and zootechnical institute, who were transferred from Dnipropetrovsk, Zhytomyr, Lviv, Poltava and Kharkiv Agricultural Institutes. By the end of this year, the number of full-time and part-time students increased to 950. In December 1958, 1,030 students studied at the hospital, and 574 at the correspondence department. In the following years, the number of students at the hospital decreased. In September 1959, 996 students studied full-time, in August 1962 – 766 (at the agronomic faculty – 280, zootechnical – 486), in August 1963 – 731, 253 and 478, respectively [7].

Thus, in the mid-1950s – the first half of the 1960s, important changes occurred in the network of higher education institutions in Khmelnytskyi. Thus, in October 1954, the Kamianets-Podilskyi Agricultural Institute, which was liquidated in 1935, was restored. In 1962, the Khmelnytskyi General Technical Faculty of the Ukrainian Polygraphic Institute named after I. Fedorova. The Kamianets-Podilskyi State Pedagogical Institute continued to work. The work was complicated by repeated structural changes in the composition of these universities, which had to be carried out on instructions from above. However, gradually the teaching staff grew quantitatively and qualitatively. At the same time, there was a significant turnover of personnel, due to which the institutes were dominated by teachers who had no more than 10 years of work experience. A mandatory attribute of that time was raising the ideological and political level of teachers. In this connection, attention was drawn to the growth of the party stratum in their environment.

The number of students gradually grew, primarily due to high-quality career guidance work. The most common forms of this work were the organization of stationary and extramural preparatory courses, the secondment of teachers and laboratory assistants to various districts and schools of Khmelnytskyi and neighboring regions to popularize the university, etc. However, despite significant efforts related to career guidance work, the contingents of newly graduated students were unstable, although the number of applications, albeit slightly, increased. Simultaneously with the improvement of the quality of the teaching staff, the number of students increased and the contingent of students also improved. As for the increase in the number of students, this applies primarily to the Pedagogical Institute, since the number of in-patient students at the



Agricultural Institutes. By the end of this year, the number of full-time and part-time students increased to 950. In December 1958, 1,030 students studied at the hospital, and 574 at the correspondence department. In the following years, the number of students at the hospital decreased. In September 1959, 996 students studied full-time, in August 1962 – 766 (at the agronomic faculty – 280, zootechnical – 486), in August 1963 – 731, 253 and 478, respectively [7].

**Conclusions.** Thus, in the mid-1950s – the first half of the 1960s, important changes occurred in the network of higher education institutions in Khmelnytskyi. Thus, in October 1954, the Kamianets-Podilskyi Agricultural Institute, which was liquidated in 1935, was restored. In 1962, the Khmelnytskyi General Technical Faculty of the Ukrainian Polygraphic Institute named after I. Fedorova. The Kamianets-Podilskyi State Pedagogical Institute continued to work. The work was complicated by repeated structural changes in the composition of these universities, which had to be carried out on instructions from above. However, gradually the teaching staff grew quantitatively and qualitatively. At the same time, there was a significant turnover of personnel, due to which the institutes were dominated by teachers who had no more than 10 years of work experience. A mandatory attribute of that time was raising the ideological and political level of teachers. In this connection, attention was drawn to the growth of the party stratum in their environment.

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#### References:

1. Ukrainian culture during the Khrushchev “thaw”. “Sixties” in culture URL: <https://studfiles.net/preview/5725429/page:50/>
2. Kanyosa P. S. (2000) The Faculty of Pedagogy celebrated its 40th anniversary // Kamianets-Podilskyi Visnyk. Kamianets-Podilskyi, 2000. October 3.
3. Filiniuk A. G. (2008) A life dedicated to the cause: labor, social and scientific and pedagogical activity of Ivan Stepanovych Zelenyuk: hist. sketch. Kamianets-Podilskyi : Axioma, 2008. 332 p.
4. Khmelnytskyi National University – 54 years // Proskuriv. Khmelnytskyi, 2016. October 13.
5. Kamianets-Podilskyi State University: past and present. Kamianets-Podilskyi:

Oium, 2003. 408 p.

6. Lytvyn V. M. (2004) Ukraine in the first post-war decade (1946-1955). Kyiv: ed. "Li-Terra" house, 2004. 464 p.

7. Agricultural Institute in Kamianets-Podilskyi // Banner of October. 1955. February 6.

## LAW

### LABOUR LAW PRINCIPLES OF PUBLIC ADMINISTRATION BODIES STAFFING LEGAL REGULATION

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**Annotation.** *Analysing the scientists' views, general theoretical approaches to the interpretation of the concepts of "principles" and "principles of law" were revealed in the article, based on which the author's definition of the term "labour law principles of public administration bodies staffing legal regulation" was proposed. Classification of relevant principles was carried out and meaningful characteristics were given to them. Special attention is focused on the fact that today only some of the above-mentioned principles are enshrined in legislative and by-laws that regulate staffing procedures in public administration bodies. In view of this, an important area of law-making activity is the consolidation of the principles, outlined in the article, in special legal acts.*

**Keywords:** *principles, principles of law, principles of labour law, legal regulation, human resources, public administration.*

**Introduction.** The state's performance of its tasks and functions is virtually impossible without the activities of specially authorized entities, which collectively make up the system of public administration bodies. The last ones are the most appropriate to understand executive power bodies, local self-government bodies, as well as subjects endowed with public administrative functions, which perform public management functions in order to ensure the interests of the state and society as a whole, while their activities are carried out exclusively within of the law [1]. Therefore, the specified subjects carry out their activities exclusively within the limits of their powers and competences, which are clearly defined in the norms of the current legislation, and this in turn determines the need for a special approach to the regulation of their work.

At the same time, it is worth mentioning that the effective and high-quality work of public administration bodies, as well as any enterprise, institution and organization, requires adequate staffing. After all, the fact is indisputable that the work of public administration bodies directly depends on each individual employee, as well as how he or she will perform his duties. That is why an important task of the legislator and the heads of relevant bodies is to create an effective and efficient personnel support system.

The latter is a complex activity in terms of its structure and content, which is based on a system of starting principles, initial ideas, which are called principles in the literature of scientific principles. At the same time, these principles mainly have a labour law nature.

**Literature review.** The problem of staffing of public administration bodies has repeatedly come to the attention of representatives of various branches of law. In particular, it was paid attention by K.S. Belskyi, V.D. Tkachenko, L.L. Bogachova, M.V. Zvik, M.I. Inshin, V.L. Kostyuk, V.P. Melnyk, S.M. Prylypko, O.M. Yaroshenko, Yu.F. Ivanov, M.V. Ivanova, L.M. Kononenko, I.P. Zhigalkin, M.V. Molodtsov, E.Yu. Podorozhnyi, L.V. Mogilevsky and many others. At the same time, despite the considerable scientific development, in the scientific literature there is a lack of scientific studies dedicated to establishing the scope and content of labour law principles of legal regulation of public administration bodies staffing. The study of it has important theoretical and practical significance, because the principles themselves create a theoretical basis for the development of the respective institute, as well as its further improvement.

**Methods.** During the preparation of the scientific research, a set of general and special methods of scientific knowledge were used, the use of which allowed a comprehensive approach to achieving the goal of the article. Thus, the logical-semantic method was used to reveal the essential meaning of the concepts “principles”, “principles of law”, “principles of labour law”. The method of documentary analysis and the analytical method were used in order to outline the range of labour law principles of legal regulation of personnel support of public administration bodies, as well as to provide them with a characteristic. The methods of systematization and classification were used to classify these principles.

**Findings and discussions.** Starting scientific research, it is worth noting that labour law principles are an offshoot of a broader category of legal principles, which, in turn, originate from the general scientific phenomenon – principle. According to the dictionary of foreign terms, the word “principle” originates from the Latin “principium”, which means the beginning or basis [2]. At the same time, the etymological dictionary defines the term “principle” through “principium”, but it contains a reference to the word “prince”, which, in turn, comes from the letters “princeps”, “primus” and “capio”. “I take/receive first”, “conduct”; “first”, “main”, “best” [3, p. 256].

In explanatory dictionaries, the concept of “principle” is considered as the main starting point of any scientific system, theory, ideological trend; the initial position of some theory, teaching, science, worldview; natural law formulated and accepted by reason; an important truth on which other truths are based; acceptance of moral law as a guide to behaviour; a rule on the basis of which a person forms his own behaviour, which often forms part of a code; fundamental content; basic principles, original ideas, which are characterized by universality, general significance, higher imperative and reflect essential provisions of theory, teaching, science, system of domestic and international law, political, state or public organization (humanism, legality, justice, equality of citizens before the law, etc.); the inner conviction of a person, which determines his attitude to reality, social ideas and activities [4, p. 795].

The meaning of the principle was actively studied within the framework of philosophical science. Thus, ancient philosophers sought to find the principle of existence of all things and usually associated it with substance. In the 16th and 17th centuries in European philosophy, the principle began to be interpreted mostly as a theoretical-cognitive category based on the distinction between what lies at the basis of reality, the principle of being, and what lies at the basis of knowledge of this reality, the principle of knowledge. In the future, the understanding of the principle moves into the sphere of logical expression of knowledge; the principle becomes a central concept, a fundamental idea that permeates a certain system of knowledge and subordinates it. Within the framework of theoretical knowledge, the principle means the requirement to deploy the knowledge itself into a system where all theoretical propositions are logically interconnected and derive from each other in a certain way. Any theoretical system of knowledge is based on interconnected principles [5, p. 519]. Philosophical dictionary of H.G. Kyrylenko and E.V. Shevtsova contains the following definitions of the concept of “principle”: 1) in ontology - the primary foundation, the beginning of the world; the concept of principle is similar to the concept of substance; 2) in the epistemology and methodology of science, a principle is a complex, concentrated form of knowledge that accumulates in itself the main direction of research, its “spirit”. I. Kant distinguished between the “regulatory” principle, which is used by Reason, which performs a guiding, stimulating role in research, and the “constitutive” principle, which is used by Reason and is the basis for ordering the world of phenomena; 3) in ethics, the synonym of the term “principle” is “maxim”, which is considered as the foundation of the will [6, p.314]. In addition, scientists note that the tendency of classical philosophy is to maximally converge and even merge all three meanings of the term “principle”. Modern philosophy limits the use of the term to epistemological and ethical meanings [6, p. 314].

Therefore, in a general theoretical form, the principles should be interpreted as the main, basic, system-forming, key position of science, as well as any mechanism, phenomenon that determines the laws of its existence, as well as the general vector of development. It is worth noting that scientific definitions of principles in jurisprudence mostly have a variable nature. Most often, principles in law are interpreted as basic principles, original ideas, which are characterized by universality, general significance, and higher imperativeness and reflect the essential provisions of theory, teaching, science, the system of domestic and international law, political, state or public organization [7, c. 110–111]. Following this theory, K.S. Belskyi by the principles of law in modern scientific literature understands the basic principles, key ideas of law that reflect its essence and content, determine the basic rules of scientific knowledge and establish the general order of practical activity [8, p.7]. At the same time, for example, O.F. Skakun completely disagrees with such an interpretation, in connection with which she interprets the principles as fundamental generally accepted norms-ideas (initial principles) that express the essence of law, the regularities of its development and have the highest authority, they are indisputable requirements put forward to the participants socialrelations in order to establish social compromise and order. According to the scientist, principles are

a kind of the coordinate system within which law develops, and at the same time a reference point that determines the direction of its development. The world experience of the development of law, the experience of civilization is concentrated in the principles [9].

M.V. Zvik, V.D. Tkachenko, O.V. Petryshyn characterize the principles as general requirements for social relations and their participants, as well as initial guiding principles, starting points that express the essence of law and stem from the ideas of justice and freedom, and also determine the general direction and most essential features of the current legal system. Researchers note that the principle has long been considered the foundation, the cornerstone of any social system (including the legal one), the requirements of which extended to all phenomena belonging to this system. Lawyers emphasize that the principles do not formulate specific rights and obligations and are not always provided with specific legislative sanctions, however, the nature of the state itself (democratic, totalitarian, etc.) can be largely judged from the principles on which the legal order is based [10, c .193]. V.V. Lazarev believes that the principles of law are the main factors that determine the most important structural connections in the subject, method, mechanism of legal regulation within the legal system and outside it (connections with the social environment), which receive official and even unofficial reflection in law. As regulators of social relations, they also have a general purposefulness, because in many respects they determine the prospects for the development of not only law, but also society and the state, thereby contributing to the elimination of gaps or other shortcomings of the current legislation [11; 12, p. 75].

Thus, legal principles are stable, formed by society, guiding ideas, basic principles, basic provisions of law, which are dissolved in the entire legal system, which determine the most important aspects of its essence, the mechanism of influence on social relations, structural connections, and in general express public perception on the content and purpose of law in the state. At the same time, the principles of law in general do not specify the ideas of particular branches of legal reality, each of them has its own purpose and specificity. An example is the labour branch of law, within which labour law principles have been formed. The latter, although they belong to the guiding legal ideas in general, contain a wide range of side features that express their uniqueness.

The special importance of labour law principles is also confirmed by the presence of a separate group of scientific approaches to defining their concept. Yes, M.I. Inshin, V.L. Kostyuk, V.P. Melnyk formed the position that the principles of labour law are a system of basic, guiding provisions, trends determined by the state of development of society and the state, which are aimed at ensuring effective legal regulation of labour relations with the aim of ensuring the unity, integrity, and system of labour law [13]. K.P. Urzhynskyi understood the principles of labour law as directly established by legal norms or as derived from them through interpretation, and which is developed by them as a guiding starting point (idea) that reflects the laws of legal regulation of labour relations [14, p.124]. A similar opinion regarding the definition of principles of labour law is held by O.V. Smirnov, which he calls the fundamental guiding principles (ideas) enshrined in current legislation, which express the essence of labour law norms and the main

directions of state policy in the field of legal regulation of social relations related to the functioning of the labour market, the use and organization of hired labour [15, p. 23]. S.M. Prylypko and O.M. Yaroshenko are convinced that the principles of labour law should be understood as the original principles and guiding ideas expressed in the legislation, which characterize the main content and internal unity of the legal regulation of labour and related relations. The principles determine the content and development of legal norms within labour law and its institutions. On the one hand, the principles reflect the regularities of labour law, and on the other hand, they represent the most general norms that operate in the entire field of legal regulation of labour and apply to all subjects of labour law [16, pp. 40, 41].

According to O.V. Starchuk, the principles of labour law must be understood as the basic ideas that underlie labour law, determine the content and direction of its norms, with the help of which the legal regulation of labour and closely related labour relations is carried out and they are characterized by systematicity and mutual agreement, objective certainty, general conditions binding, universality, general significance, stability, regularity [17, p.163; 18]. Such scientists as Yu.F. Ivanov, M.V. Ivanova, L.M. Kononenkom believe that the principles of labour law are understood as basic ideas that express the essence of state policy in the field of legal regulation of labour and social relations that arise at the same time [19, p.58]. O. Ya. Lavriv interprets the principles of labour law as a sectoral variety of the principles of law in general, which are defined as the guiding, initial provisions of this branch of law, which express its essence and unity, reflect the main approaches to the legal regulation of labour and closely related relations, and determine the general orientation development of the field of labour law [20, p. 185]. V.V. Zhernakov talks about labour law principles as universally recognized basic provisions that determine its essence, determine the unity of legal regulation and the regularity of the development of the system of labour law norms [21, p. 36]. The interesting position of I.P. Zhigalin, who believes that the principles of labour law are objectively determined by the nature and content of social and labour relations, enshrined in relevant sources or expressed in stable legal practice, universally recognized basic guiding principles, starting ideas that constitute the axiological basis of labour law, characterize the content, essence, and purpose of this branch of law in society, reflect the general laws of its emergence, development, and functioning, and serve to create an internally consistent and effective system of legal norms in the field of labour [22, p. 91-92].

Therefore, the above approaches to the content and origin of labour law principles make it possible to draw a number of conclusions regarding their legal meaning and essence in general, as well as labour law principles of staffing of public administration bodies, in particular:

- firstly, the principles of labour law are a peculiar set of original ideas that characterize the impact of law on social relations, which are, in particular, related to the labour process;

- secondly, labour principles are formed on the basis of social awareness of the proper appearance and functioning of the labour sphere, where each person can exercise his or

her labour rights to obtain the corresponding substantial and spiritual benefits.

- thirdly, the principles of labour law are vector-determining factors that determine the direction of the labour legislation norms action;- fourthly, the principles of labour law are characterized by industry-wide imperative. That is, these original ideas contain mandatory standards-requirements for the behaviour of subjects of labour law;

- fifthly, labour principles have an abstract nature, because only a part of them is directly enshrined in the provisions of the legislative and by-law framework of the regulatory framework;

- sixthly, the principles of labour law, although they have the highest degree of imperativeness, and therefore stability, are generally “sensitive” to changes in public opinion about the regulation of labour relations. In other words, the principles of the labour law content can be supplemented with new basic principles with the emergence of new social relations and legal institutions that regulate them.

Thus, the labour law principles of legal regulation of public administration bodies of Ukraine staffing should be interpreted as fixed in the norms of the current labour legislation, basic, fundamental, objectively existing, guiding ideas of legal regulation of social relations in the labour sphere, which carry a standard of behaviour of labour law subjects in the process of their implementation of public administration bodies staffing.

At the same time, the above-noted complexity of such starting bases raises questions about their composition and list. Representatives of labour law science have different opinions about the classification of the principles of labour law in general. For example, M.V. Moldovan and O.M. Krapyvin divides the principles of labour law into three groups: 1) the principles of justice – provide for the provision of fair working conditions, including the limitation of working hours, the provision of daily rest, days off, paid annual leave, adequate remuneration, etc.; 2) principles of equality of subjects of labour relations; 3) principles of democratic provision and labour management [23; 24].

The division of principles of labour law into several classification groups is also peculiar to K.N. Husov and V.N. Tolkunov, who highlight the principles of involvement in work, ensuring employment and the use of labour force; principles of a high level of working conditions and protection of labour rights; principles of industrial democracy and employee personality development [25]. O.V. Smirnov reflects in the same vector. In his research, the scientist singles out four groups of principles of labour law: principles that express state policy in the field of the legal labour market and effective employment; principles containing guidelines in the field of establishing work by an employee; principles determining the use of labour by employees; principles determining the protection of labour rights of employees. Taking into account this classification, the author formulates the principles of freedom, active participation of workers and trade unions in established working conditions, certainty of labour function, stability, ensuring discipline, remuneration for work without discrimination, guaranteed labour rights [26].

VI. Shcherbyna refers to the fundamental principles of labour law, which determine the direction of the norms of this field of law: the rule of law, freedom of labour, freedom from coercion to work, the determination and stability of the labour function, humanism,



social justice, socio-economic partnership, social cooperation, social peace, protection of the employee from the arbitrariness of the employer, equal treatment of employees by the employer and others [27; 13]. O.Ya. Lavriv to the principles of labour law refers: the principle of freedom of labour in the field of labour law; the principle of social partnership and contractual establishment of working conditions in the field of labour law; the principle of ensuring the unity and differentiation of legal regulation; the principle of optimal combination of centralized and local legal regulation [20].

In our opinion, labour law principles of legal regulation of public administration bodies staffing cannot be equated with any of the classification presented above, because both in terms of content and in terms of list, they constitute a separate group of original ideas. The latter consists of general scientific principles, the content of which is adapted to the field of labour law, directly separate sectoral principles of labour law, as well as original special ideas that arise exclusively in the field of personnel support of the studied category of employees.

The basic general labour law principles of the legal regulation of public administration bodies staffing are the interconnected original ideas of the rule of law and legality. Both of these principles are reflected in the Constitution of Ukraine, as well as special legal acts. Thus, the Basic Law states that the principle of the rule of law is recognized and valid in Ukraine. The Constitution of Ukraine has the highest legal force. Laws and other normative legal acts are adopted based on the Constitution of Ukraine and must comply with it. The norms of the Constitution of Ukraine are norms of direct effect. Addressing the court to protect the constitutional rights and freedoms of a person and a citizen directly on the basis of the Constitution of Ukraine is guaranteed. In addition, the legal order in our country is based on principles according to which no one can be forced to do what is not provided for by law. Bodies of state power and bodies of local self-government, their officials are obliged to act only on the basis, within the limits of authority and in the manner provided by the Constitution and laws of Ukraine [28].

In accordance with the departmental normative legal act, in particular the Law of Ukraine “On Civil Service”, civil service is carried out in compliance with the following principles: 1) the rule of law - ensuring the priority of human and citizen rights and freedoms in accordance with the Constitution of Ukraine, which determine the content and direction of the activities of the state an employee during the performance of tasks and functions of the state; 2) legality - the duty of a civil servant to act only on the basis, within the limits of authority and in the manner prescribed by the Constitution and laws of Ukraine; 3) professionalism - competent, objective and impartial performance of official duties, constant improvement of the level of professional competence by a civil servant, fluency in the state language and, if necessary, a regional language or the language of national minorities, determined in accordance with the law; 4) patriotism - devotion and faithful service to the Ukrainian people; 5) integrity - the orientation of the civil servant's actions to the protection of public interests and the refusal of the civil servant to prevail over private interest during the exercise of the powers granted to him; 6) efficiency - rational and effective use of resources to achieve the goals of state policy;

7) ensuring equal access to civil service - prohibition of all forms and manifestations of discrimination, absence of unjustified restrictions or granting of unjustified advantages to certain categories of citizens during entry into civil service and its completion; 8) political impartiality - preventing the influence of political views on the actions and decisions of a civil servant, as well as refraining from demonstrating one's attitude towards political parties, demonstrating one's own political views during the performance of official duties; 9) transparency - openness of information about the activity of a civil servant, except for cases specified by the Constitution and laws of Ukraine; 10) stability - the appointment of civil servants for an indefinite period, except in cases specified by law, the independence of the personnel of the civil service from changes in the political leadership of the state and state bodies [29].

In the context of staffing of public administration bodies, these principles are expressed in several points:

- firstly, the main regulator of legal relations in the field of labour of the investigated category of employees and its provision is exclusively law, the influence of which is expressed through the norms and institutions of labour legislation;

- secondly, the activities of public administration bodies staffing must be carried out in full accordance with the norms of the current legislation of Ukraine.

The addition to the mentioned principles is the sectoral labour law idea of unity and differentiation of the regulation of labour relations. It should be noted that the principle of unity and differentiation of legal regulation of labour relations is one of the oldest principles of labour law. This principle, as its name suggests, has a dual purpose: establishing uniform, identical working conditions for all employees and, at the same time, differentiating working conditions for certain categories of workers under certain circumstances. Law provides for the application of the same scale to different people. That is why labour law, establishing in its norms uniform rules for all employees regarding hiring and firing, working time and rest time, pay, labour discipline and labour protection, provides all citizens with fair and equal opportunities to earn for a living by their work. The unity of the legal regulation of labour relations means that the norms of labour law establish a high level of working conditions, they must be observed by all employers who hire employees on the basis of an employment contract. At the same time, labour law cannot fail to take into account objective circumstances caused by the specifics of production industries, professional, gender, age characteristics of employees, location of enterprises, etc., which require a special approach to legal protection of working conditions. All these circumstances ultimately lead to the violation of the uniform rules governing the use of labour and require the issuance of special norms that adapt general legal prescriptions to specific labour conditions [30].

In accordance with the principle of unity and differentiation, the basis of staffing of public administration bodies is the system of norms of legislative acts in the field of labour in general, which defines the standards and regularities of labour regulation of all, without exception, categories of employees, as well as special documents - departmental normative legal acts that outline the specifics of the labour process exclusively for

employees of public administration bodies. The basis of this principle can be found in the norms of the Labour Code, which allows for the existence of both general labour legal norms and acts, as well as special ones [31].

The next labour law principle of legal regulation of public administration bodies staffing should be determine the equality of labour rights of citizens of Ukraine. According to Article 2-1 of the Labour Code, any discrimination in the field of labour is prohibited, in particular, violation of the principle of equal rights and opportunities, direct or indirect restriction of the rights of employees depending on race, skin colour, political, religious and other beliefs, sex, gender identity, sexual orientation, ethnic, social and foreign origin, age, state of health, disability, suspicion or presence of HIV/AIDS, family and property status, family responsibilities, place of residence, membership in a trade union or other association of citizens, participating in a strike, applying or intending to apply to the court or other authorities for the protection of their rights or providing support to other employees in the protection of their rights, notification of possible facts of corruption or corruption-related offenses, other violations of the Law of Ukraine “On Prevention of Corruption”, as well as assisting a person in making such a notification, based on language or other features unrelated to the nature of the work or the conditions of its execution [31].

Another important guiding idea of the legal regulation of public administration bodies staffing is the principle of ensuring fair and safe conditions of work and rest, the content of which is that work in positions in public administration bodies should be carried out in proper, safe and healthy conditions and in a timely manner and in full to be paid, providing a dignified human existence for a person and his or her family; rest must be provided, including limitations of working hours, provision of daily rest, weekends, holidays, non-working days, and paid annual leave, taking into account the entire array of specifics of service and labour activity of the studied category of employees [32, p.39].

The last labour law principles of legal regulation of public administration bodies staffing are special principles, among which it is most appropriate to include are the following:

1) the principle of stability - in accordance with this principle, staffing is carried out systematically and accompanies the entire labour process of all employees of public administration bodies;

2) the principle of comprehensiveness – in accordance with the stated starting principle, staffing should be expressed not only in the preparation of documents for the implementation of certain personnel measures, but also constantly monitor staffing problems in public administration bodies and form the ways to solve them;

3) the principle of the priority of the labour interests of employees, according to which the staffing of public administration bodies should be directed, first of all, to the formation of the most favourable conditions for the realization by the studied category of workers of the labour rights granted and guaranteed to them by the Constitution and labour legislation, and only then the staffing management policy;

4) the principle of the development of personnel potential - the staffing should be aimed at the constant improvement of qualifications and professional skills of employees in order to improve their performance of their labour and service functions.

**Conclusions.** Thus, the above initial ideas make up the system of principles of legal regulation of public administration bodies staffing. They, in our opinion, most fully and meaningfully reflect the legal connection of the staffing, as a separate labour law institute within the labour branch of law. In addition, the outlined by us principles emphasize the uniqueness of this phenomenon and the peculiarities of the field of labour activity of the studied category of employees. Unfortunately, to date, only some of the above-mentioned principles are enshrined in legislative and by-law normative legal acts, the norms of which are aimed at regulating the staffing procedures. This, in turn, may indicate the inferiority and ineffectiveness of the legal regulation of labour of the studied category of workers, as a result of which there is scope for violation of their labour rights and the interests of workers guaranteed by the Constitution, as well as general and special labour legislation. One of the key ways to solve this problem is to enshrine the principles outlined in our work in a separate, special normative legal act, the Law of Ukraine “On Labour Activities of Employees of Public Administration Bodies”.

#### References:

1. Paيدا Y. (2020) Public administration as an object of administrative and legal regulation. Scientific Bulletin of the Dnipropetrovsk State University of Internal Affairs. Issue 3. P. 65-72
2. Melnychuk O. S. Dictionary of foreign words (1974). K.: P. 547
3. Shanskyi M. School etymological dictionary of the Russian language: the origin of words (2001). Stereotype. M.: Drofa. 2001. 400 p.
4. Webster’s New Dictionary and Thesaurus of the English Language (1993). Lexicon Publications, Inc. Danbury. 1248 p.
5. Shinkaruk V.I. Philosophical encyclopedic dictionary (2002). Institute of Philosophy named after G.S. Pans of the National Academy of Sciences. 742 p.
6. Kyrylenko H.G., Shevtsov E.V. (2010) Brief philosophical dictionary. Philological Society “SLOVO” LLC. 498 p.
7. Shemshuchenko Yu. S. Legal encyclopedia: In 6 volumes (2011) Volume 1. “Legal Opinion” Publishing House. 656 p.
8. Belsky K.S. (1998) About the principles of administrative law. Administrative law and administrative process: old and new problems. State and law. Issue 8. P. 5-32.
9. Skakun O. F. Theory of the State and Law (2001). Kh.: Konsum. 664 p
10. Zvik M.V., Tkachenko V.D., Bogachova L. L., etc. General theory of the state and law (2002). Kh.: Pravo. 432 p.
11. Lazarev V.V. Gaps in law and ways to eliminate them (1974). M.: Jurid. lit. 1974.
12. Rudneva O.M. (2002) Gender equality in the law of Ukraine [Candidate dissertation]. Kharkiv National Law Academy of Ukraine named after Yaroslav the Wise 178 p.
13. Inshin M.I., Kostyuk V.L., Melnik V.P. Labour law of Ukraine (2016). K.:

Center for Educational Literature. 472 p.

14. Urzhinsky K.P. To the question of the principles of legal regulation of social relations (1968). Leningrad: Leningrad Publishing House. university. Issue 3. P. 123-126

15. Smirnov O.V. Labour law (1997). M.: Prospect. 448 p.

16. Prilypko S.M. Labour law: [help. for preparation to the state exam] (2015). Kh.: Pravo. 230 p.

17. Starchuk O. V. (2011) Principles of labour law of Ukraine [Candidate dissertation]. Lutsk. 187 p.

18. Arsentieva O.S. (2016) Concepts and features of principles of labour law of Ukraine. Actual problems of law: theory and practice. Severodonetsk. Issue 31. P.34 - 43.

19. Ivanov Yu.F. Labour law of Ukraine (2012) K.: VOC of AMU. 304 p

20. Lavriv O. Ya. (2006) The system of principles of labour law of Ukraine [Candidate dissertation]. Institute of State and Law named after V.M. Koretsky National Academy of Sciences of Ukraine. K.: 211 p.

21. Zhernakova V.V. Labour law (2012). Kh.: Pravo. 496 p.

22. Zhigalkin I. P. (2015) Principles of labour law: an attempt to formulate a definition of the concept. Law and innovative society: electronic. of science view. Issue 2(5). P. 90-93.

23. Starchuk O. (2011) Classification of principles of labour law of Ukraine. Legal Ukraine. Issue 8. P. 82-86.

24. Molodtsov M.V., Krapivin O.M., Vlasov V. I. Labour law of Russia (2001). Moscow: NORMA-INFRA-M. 576 p.

25. Gusov K.N., Tolkunova V.N. Labour law of Russia (1999). M.: MAUP. 1999. P. 55.

26. Smirnova O.V. Labour law (1997). M.: "Prospekt". p. 23

27. Shcherbina V. I. Labour law of Ukraine (2008). K.: Istyna. 384p.

28. Constitution of Ukraine (1996), Law of Ukraine №254k/96-vr.

29. On civil service (2015), Law of Ukraine №889-VIII URL: <https://zakon.rada.gov.ua/laws/show/889-19/conv#Text>

30. Pylypenko P.D., Burak V.Ya., Kozak Z.Ya. et al. Labour law of Ukraine: academic course (2014). In Yure. 552 p.

31. Code of Labour Laws of Ukraine (1971), Law of Ukraine №322-VIII URL: <https://zakon.rada.gov.ua/laws/show/322-08>.

32. Melnyk K. Yu. Labour law of Ukraine (2014). Kh.: Disa plus, 2014. 480 p.

## THE PLACE AND IMPORTANCE OF LEGAL LIABILITY IN THE LABOR LAW SYSTEM OF UKRAINE

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**Annotation.** *Special attention in the article is focused on the fact that Ukrainian legislators and domestic scientists in the process of improving the labor law system of Ukraine should pay particular attention to the improvement of the institute of legal liability, because the latter is an important means of ensuring and implementing the principles of the rule of law and legality in the field of employment. It was noted that legal liability is not only a guarantee of the rights of the parties to the labor relationship, but also serves as an important means for their restoration.*

**Keywords:** *labor law, legal institute, legal liability, disciplinary liability, material liability.*

**Introduction.** The legal system of Ukraine consists of a large number of branches, each of which performs its own, important and special role. At the same time, one of the most socially significant in this system is the labor branch of law, because its norms are aimed at ensuring the proper functioning of labor and closely related legal relations. It is worth noting that the system of labor law in our country has been formed for several centuries and currently this process is still incomplete. This is due to several factors: firstly, the very nature of work, which is dynamic (new forms of employment, wages, etc. constantly appear); secondly, the inability of the domestic legislator to promptly respond to modern challenges, which is confirmed by the fact that the Labor Code of Ukraine has not been adopted for many years.

It should be noted that the key characteristic of the labor field of law is its systematicity, which indicates that: first, labor law consists of a certain set of legal norms, that is, it is a multi-element entity; secondly, its elements have among themselves relevant subject connections through which they interact, develop, complement and continue each other; thirdly, the structural elements of labor law are not placed chaotically, but in a certain order, thus forming the internal structure of this legal field; fourthly, the structure of the labor law system is characterized by hierarchy — it includes systems of a lower order. The system of the lowest order is a legal norm; fifthly, the labor branch of law is an integral, relatively complete regulatory formation. At the same time, it is important to emphasize that this integrity is manifested at the external and internal levels [18].

Institutes are a necessary link in the integral system of labor law. They should be

interpreted as the main structural links of the labor law system, this is due to the fact that, firstly, they are more clear, specified and homogeneous in terms of their subject of regulation, and secondly, they are logically complete and relatively independent subsystems of the labor law system, which allows making certain structural and substantive changes in them without affecting other components of the system of the studied legal field [18]. An important place among the institutes of labor law is given to legal liability, which acts as an important means of ensuring and respecting the rights, freedoms and interests of the parties to labor relations, as well as a key tool for restoring the violated rights of the labor law subjects.

**Literature review.** The problem of determining the place and importance of legal liability as a legal institute has repeatedly come to the attention of scientists representing various fields of law. In particular, a significant contribution to the development of the specified problem was made by N.B. Bolotina, L.Yu. Bugrov, V.S. Venediktov, L.Ya. Ginzburg, O. D. Zaykin, M. I. Inshyn, M.M. Klemparskyi, R.I. Kondratiev, D.E. Kutomanov, R.Z. Livshyts, M.V. Lushnikova, A.R. Matsyuk, V.I. Nikitynskyi, A.Yu. Pasherstnyk, P.D. Pylypenko, O.I. Protsevskyi, V.G. Rotan, V.M. Skobyelkin, O.V. Smyrnov, A.I. Stavtseva, V.M. Tolkunova, K.P. Urzhynskyi, G.I. Chanysheva, N.M. Khutoryan, O. M. Yaroshenko, etc. However, paying tribute to the scientific efforts of these and other researchers, it should be noted that a number of problematic issues in the field of labor law do not lose their relevance, one of them, of course, is the problem of legal liability.

**Methods.** A complex of general and special methods of scientific knowledge was used in the process of preparing a scientific study. Thus, the search and bibliographic method provided a search for literary sources on the research issues, which made it possible to study the presented issues more deeply. The logical-semantic method made it possible to reveal the essence and content of a number of concepts, for example responsibility, legal liability, etc. The use of the analytical method made it possible to determine the place and role of legal liability in the labor law system of Ukraine. Using the formal and logical method, the current state and shortcomings of legal liability in labor law have been established.

**Findings and discussions.** Historically, liability arose as a means of eliminating inconsistency, disorganization, anarchy and arbitrariness in social life, “removing” contradictions and conflicts [1, p.107]. V.S. Prokhorov emphasizes that the need for regulation turns out to be a primary social generalized need, as it acts as a way to overcome possible contradictions between the individual and society, between the interests of individual members of society [1, p.107]. In this connection, it will be appropriate to look at the meaning of the concept of “social responsibility”. T.O. Chepulchenko in his research on the concept and essence of social responsibility writes that it (social responsibility) is the most important element of the relationship between an individual and society, it performs the function of regulating individual behavior in accordance with society’s requirements [2, p.138]. From the L.I. Biletska point of view, social responsibility is the duty of an individual (which expresses the objectively necessary

relationship between him or her and society) to evaluate his or her intentions and make a choice of behavior in accordance with the norms that reflect the interests of social development, and in case of violation them (manifests of irresponsibility) there is a duty to report to society and be submitted to public condemnation (measures of public coercion) or punishment (measures of state coercion) for an anti-social act [3, p.20]. O. Ivanenko notes that social responsibility is a form of relationship between an individual and society. The author notes that it regulates an individual's behavior in accordance with its requirements. Responsibility arises as a result of the social necessity of harmonizing human behavior with the system of social relations as a sphere of boundaries, frameworks of necessary human behavior, society's demands on the individual, as the inevitability of responsibility for one's behavior before a person or organization that has the right to do so [4, p.60].

Therefore, responsibility arose as an objective need to ensure the regulation of the behavior of members of a certain community in such a way that the actions of each of them are properly correlated with the actions and interests of other members of this community.

With the emergence of a state and law, social responsibility acquired a legal form and became one of the fundamental institutes of law. A legal institute is a personified block of the field of law, which is characterized by: a) homogeneity of factual content — each institute is designed to regulate an independent, relatively personified group of relationships or individual actions of people; b) legal unity of legal norms [5, p. 200; 7]. Norms included in the legal institute form a single complex, manifested in general provisions, legal principles, specific legal concepts, which creates a special legal regime of regulation inherent in this type of relationship; c) normative personification, i.e. personification of norms forming a legal institute in chapters, sections, parts, other structural components of the law or other regulatory legal act; d) completeness of regulated relations. The institute of law covers such a set of norms (definitive, authorizing, prohibiting) which is designed to ensure the integrity of the relations regulated by it [5, p.200; 7]. By virtue of these properties, every institute of law performs a regulatory task inherent only to it and does not come into conflict with other structural elements of the legal system [5; 7].

As for institutes of labor law, they, as quite rightly pointed out by V.S. Prokhorov, cover a set of legal norms that is smaller than the branch of law and differ among themselves according to the objective feature of regulation, that is, the features of certain types of social relations or individual parts (elements) of some specific type of social relations [1; 25]. As Yu.Yu. Ivchuk correctly notes, institutes of labor law are the objectively formed structural subdivisions, designed within the scope of the subject of this field of law to regulate with the necessary detail a separate type of social labor relations or a separate element (side) of a complex unified labor legal relations [7, p.58]. Foreign scientists, such as J.A. Fossum, E. Salmeron-Manzano, and F. Salmeron-Manzano, also highlighted the features of the institute of labor law. The scientists have noted that institutes of labor law represent a set of legal norms that regulate processes



and types of labor within the framework of social relations between an employer and an employee, that is, within the framework of labor relations [20]. Therefore, institutes are the main structural links of the labor law system, this is due to the fact that they are: firstly, more clear, specified and homogeneous in terms of their subject of regulation, and secondly, they are logically complete and relatively independent subsystems of the labor law system, which allows making certain structural and substantive changes in them, without affecting other components of the system of the studied legal field.

Important value of the division into institutes is that:

- laws that are homogeneous in terms of subject orientation and methods of regulation are grouped together, which contributes to a clearer definition of the main directions of the implementation of the labor law regulatory influence;
- more meaningful and operational regulation of labor relations is ensured;
- the internal integrity and autonomy of the labor law system is ensured.

The process of establishment and development of the institute of legal liability in domestic labor law was quite interesting and ambiguous. Its most important feature is that for a long time this institute did not have a pronounced labor-law nature, as it was constantly intertwined with relations of a civil-law nature (at the dawn of the emergence of labor law – the end of the first and the beginning of the second half of the 19th century), and partially performed tasks of administrative and criminal prosecution (the period of the “war communism” policy, as well as from the beginning of the 30s to the second half of the 50s of the 20th century). After all, starting from the 70s of the 20th century, legal liability began to be formalized as a full-fledged, independent institute of the labor law. Its two main varieties were formed: disciplinary and material responsibility, the legal principles and mechanisms of their functioning were determined. However, contemporary conditions of social life (political-legal, socio-economic, etc.) require further development of the institute of legal liability within the framework of labor law.

There is no single point of view among lawyers regarding what constitutes legal liability. In general, most scientific points of view on responsibility as a purely legal concept can be divided into two general groups:

1) liability is a manifestation (instrument) of state coercion, a means of punishing offenders. M.S. Malein emphasized that punishment is legal liability. The essence of responsibility, its integral feature is the punishment of the offender [8, p. 19, 30];

2) liability is an obligation that reflects the need for a person committed illegal actions to suffer certain unfavorable (negative) consequences in the form of certain deprivations. This obligation is placed on the offender as an additional one and does not depend on his will. At the same time, it should be noted that the fulfillment of this duty by the offender is again ensured by the power of state coercion.

Most labor researchers consider liability from the standpoint of its negative (retrospective) aspect. At the same time, a significant number of them do not deny the existence of a positive attribute of the liability, however, as a rule, they attribute it not to the legal, but to the moral and ethical side of social behavior. We are convinced that in the modern conditions of democratization and humanization of society, focusing

attention on the positive aspect of liability is quite clear and appropriate, but it should not be considered as a key, determining element of the essence of the institute of legal liability, including in the field of labor law. After all, firstly, a positive approach to liability does not allow to form a clear idea about its scope, grounds, consequences, time limits; secondly, legal liability in its traditional sense has a sound law enforcement character, while in the prospective context it merges with other regulatory norms and institutes of law. In this regard, the point of view that the consideration of “positive” responsibility as a legal liability means the actual elimination of responsibility as a legal institute, because under such conditions any type of activity regulated by law could be considered such responsibility [9, p. 115].

In addition, it should be noted that a positive understanding of responsibility presupposes, as a mandatory feature, a deep awareness by a person of the need to behave in accordance with social norms, in particular the norms of law, but it is not always possible to achieve this, due to the specifics of the legal culture and legal awareness of different individuals, and also for other reasons. At the same time, practice shows that in a number of cases, individuals act in accordance with the norms of legislation for reasons other than a personal deep belief in the necessity and usefulness of following their prescriptions, for example, out of fear of being punished, as a result of conformist behavior, etc. For retrospective responsibility, the reasons for a person’s lawful behavior are not so important – any lawful behavior, regardless of its subjective motives, is acceptable, but in the context of negative responsibility, more attention is paid to the causes and consequences of illegal actions.

Taking into account all the above, we believe that in the context of labor law, the most important is the retrospective (negative) aspect of legal liability, and therefore its main purpose is to impose on a person who has committed a violation of the norms of labor legislation, the appropriate additional burdens or the application of certain deprivations, restrictions. It should be noted that the function of encouraging the participants of labor and closely related relations to lawful behavior is also characteristic of such responsibility. However, in the context of legal liability, they are mainly implemented from the standpoint of force (coercion) and punishment, or rather by threatening their use in the event of a misdemeanor, that is, a kind of deterrence occurs. This approach to understanding the role of responsibility in labor law allows, in our opinion, to clearly understand its essential content, scope, grounds and consequences of its application.

So, the legal content of legal liability in labor law is a negative obligation, that is, one that is imposed on a participant in labor relations against his or her will as a result of his or her committing a labor offense and it consists in the need for the offender to suffer certain negative consequences for himself in the form of deprivations, burdens or restrictions. We consider it necessary to emphasize that it is not in vain that we talk about responsibility precisely as an obligation, and not a punishment, because within the limits of labor relations and labor law, responsibility does not always have a bright punitive effect, in some cases it fulfills, rather, rights-restoring and compensatory functions (meaning material responsibility) [10, pp. 6–15]. However, from this it (responsibility)

does not cease to be an additional obligation, which the subject must fulfill regardless of his or her desire.

The main characteristics of liability in labor law include the following:

- the basis for bringing to labor legal liability is the violation by the party (parties) of the labor contract of their obligations, provided for in this contract and the legislation on labor;
- arises not between the offender and the state, but between the former and the subject with whom he or she is in labor relations. In the same case, if the dangerous consequences of illegal actions harm not only the other side of the labor relationship, but also the interests of society as a whole, then there is no longer labor law, but another liability – administrative or criminal, depending on the norms of which branch of law the interests are violated are protected, and what is the level of danger of these harmful effects. That is, the implementation of labor legal liability does not involve the emergence of new legal relations between the violator and the state, represented by its competent body. It has, so to speak, an internal character, that is, it arises and is carried out between the same subjects and within the same labor relations as the main obligations;
- the mediated nature of the relationship between labor and state liability. Although the state, in the person of its competent subjects, is not a direct participant in the relationship of legal liability in labor law, nevertheless it also makes its contribution to its functioning, through the definition of material and procedural legal bases for the emergence and implementation of labor legal liability;
- regulated both centrally and by local regulatory documents [19].

Therefore, legal liability is an important guarantee of legality in the field of labor relations and the proper performance by the parties of their labor duties. The Institute of liability regulates the grounds for the occurrence and the procedure for implementation by a party of labor relations of additional onerous obligations (the type and extent of which are determined by legislation), which are placed on it in connection with the commission of a labor offense. Liability, in addition to punitive and restorative, also has an educational and stimulating character. That is, its action is aimed at increasing the level of legal awareness and legal culture of the parties to the legal relationship. Their upbringing in the spirit of the need for conscious lawful behavior, as the most expedient and useful for these persons and society as a whole.

Within the framework of the institute of liability in labor law (or labor law liability), there are several types of liability, namely disciplinary and material. Disciplinary and material liability in labor law, although they function within the same legal relationship, each of them has a number of characteristic properties that significantly distinguish them from each other. Disciplinary liability, in the general theoretical sense, is emphasized by O.V. Smirnova, is the application of disciplinary sanctions in the form of restrictions of a personal or organizational nature to the guilty employee in the manner and under the conditions provided for by labor legislation [6, p.39; 27]. M.V. Romanov notes that disciplinary responsibility is one of the types of liability, which consists in the imposition by the administration (higher in the hierarchy in subordination) of a certain organization

or institute of disciplinary sanctions for violation of discipline [12, p.3; 13, pp. 23–24]. P.E. Matvienko talks about disciplinary liability as a legal form of influence on a violator of labor discipline [14, p.45]. In their scientific works, C. Jun, I.A. Vasiliev and others prove that disciplinary liability consists in proving and condemning the actions of a person who has committed a gross violation of the standards and rules adopted within the framework of the relevant organization, as well as applying legal penalties to such a person [23]. That is, the object of protection of disciplinary responsibility is a set of social relations that make up the content of the institute of labor discipline. Accordingly, by violating labor discipline, the employee encroaches on the established procedure of the specified labor relations. Labor discipline is a specific organizational and legal condition that reflects, on the one hand, the current system of requirements (rules) imposed on employees, and on the other hand, the level of compliance of the latter's labor behavior with these rules. By its legal essence, labor discipline has a binding nature, that is, its content is mainly obligations.

Moving on to the consideration of material liability, it is worth noting that, unlike disciplinary liability, both the employee and the employer can be brought to it [24]. At the same time, the material responsibility of employees has a more clear and meaningful, both scientific study and legislative regulation. Material liability, writes P.D. Pylypenko, is the duty of each of the parties to the labor relations (the employee and the employer) to compensate for the damage caused to the other party as a result of non-performance or improper performance of labor duties in the amount and manner established by law [15, p. 158–159]. N.B. Bolotina defines material liability as one of the types of legal liability, which is the obligation of one party to an employment contract – the employee or the employer – to compensate the other party for damage caused as a result of culpable, illegal non-fulfillment or improper performance of labor duties in established by law size and order [16, p. 39]. L.P. Gruzinova and V.G. Korotkin write that material liability is an institute of labor law and one of the types of liability under labor law, as well as a type of legal liability of parties to an employment contract [17, p.59]. An indispensable condition for the occurrence of material liability is the presence of direct real damage caused by one party to the employment contract to the other. At the same time, the damage can be both material, i.e. expressed in the occurrence of property and (or) monetary damages (losses), and moral in nature - psychological and (or) physical suffering.

The main purpose of material liability is compensation for material and financial losses and (or) moral damage caused as a result of non-performance or improper performance of contractual obligations by a party to an employment contract. That is, in contrast to disciplinary liability, which aims to support the appropriate organizational and legal regime of the relations between employees and the employer, material liability is mainly directed at the protection, preservation and restoration of material, financial and social (physical and mental health) values of the parties to labor relations.

It should be noted that in addition to property encumbrances (obligations), which are not inherent in disciplinary liability, which involves the establishment of organizational and moral consequences for the violator, material liability is also characterized by the fact

that it continues to function even when the employment relationship between the parties has been terminated, until the party fully fulfills its obligations, which were assigned to it as a result of its being held financially liable.

**Conclusions.** Thus, the above quite convincingly testifies to the particularly important importance of the institute of legal liability as a component of the labor law system. This is explained by the fact that through the institute of legal liability it is considered possible: a) to ensure the realization of the legal rights, freedoms and interests of all participants in labor and closely related legal relations; b) restore the violated rights of subjects of labor relations; c) ensure compliance with labor discipline at enterprises, institutes and organizations, and thus increase the efficiency and effectiveness of their activities.

In conclusion, it should be noted that from the moment independence was proclaimed in August 1991 until today, with the aim of improving labor relations and adapting them to the new realities of social and economic development, a number of changes were made to labor legislation, including the legal liability regulation. However, despite this, the mechanism of implementation of the latter in many aspects remains the same as it was during Soviet times, and therefore does not meet modern challenges and needs. In our opinion, the main shortcomings of the institute of legal liability in labor law include the following: firstly, there is no official definition of the concept of “labor offense” or “offenses in the labor sphere” in the norms of the current labor legislation; secondly, there is no clear official definition of the concepts of disciplinary and material liability, which certainly prevents the normal practical implementation of these institutes; thirdly, there is no clear and meaningful regulation of employers’ financial responsibility; fourthly, absolutely no attention is paid to the issue of compensation for moral damage within the framework of labor relations [18; 19]. These and other problematic aspects of the current legislation have a negative impact on the effectiveness of the legal liability of fulfilling its functional and purposeful task and must be resolved in the course of the new systematization of Ukrainian labor legislation.

#### References:

1. Prokhorov V.S. Crime and responsibility Leningrad University (1984) Leningrad University Publishing House. 320 p.
2. Chepulchenko T. O. (2010) Social responsibility: concept and essence. Bulletin of NTUU “KPI”. Politology. Sociology. Law: a collection of scientific works. Issue 1(5). 137–142. <http://ela.kpi.ua/bitstream/123456789/6088/1/10%20-%201%285%29%20-%202023.pdf>.
3. Lypinsky D.A., Khachaturov R.L. (2006). General theory of legal liability. Publishing House of R. Aslanov “Legal Center Press”. 950 p.
4. Ivanchenko O. (2006) Definition of the concept, essence and types of social responsibility: actual problems. Law of Ukraine, Issue 1, P. 60-65.
5. Lazarev V. V. (2001) The General Theory of Law and the State. Law. lit.. 520 p.
6. Smirnov O.V. (1991) Soviet labor law. Profizdat. 367 p.

7. Ivchuk Yu. Yu. (2004) Theoretical approaches to the labor law system of Ukraine in the conditions of the market economy [Candidate dissertation, Kharkiv National University of Internal]. Kh.: 167 p.
8. Maleyn N. S. Legal liability and justice (1992). Manuscript.
9. Bratus S. N. Legal liability and legality (a theoretical outline) (1976). *Juryd. lit.* 216 p.
10. Podorozhnyi E. Yu. (2014) Theoretical approaches to defining the concept of “legal liability”. *Bulletin of Kharkiv National University of Internal.* Issue 3(62). P.6-15.
11. Kovalenko K. V. (2009) Legal regulation of disciplinary responsibility of employees of internal affairs bodies [Candidate dissertation, Kharkiv National University of Internal]. Kh.: 213 p.
12. Panova N. I. (1993) Russian-Ukrainian dictionary of terms on the theory of state and law. *Ukr. law Academician.*
13. Romanov M. V. (2002) Legal regulation of enforcement measures applied to persons deprived of their will [Candidate dissertation, Kharkiv National University of Internal]. Kh. 2013 p.
14. Matvienko P. E. (2010) Administrative responsibility for violation of the legislation on commercial secrecy [Candidate dissertation, Kharkiv National University of Internal]. K. 210 p.
15. Pylypenko P. D. *Labor law of Ukraine* (2005). *Istyna.* 215 p.
16. Bolotina L.B. *Labor law of Ukraine: textbook* (2006). *Vikar.* 193 p.
17. Gruzinova L. P., Korotkin V.G. *Labor law of Ukraine* (2003). *MAUP.* 172 p.
18. Mogilevskiy L. V. (2016) The labor law system of Ukraine [monograph] Kh: “Panov”. 412 p.
19. Podorozhnyi E. Yu. (2016) Problems of the theory and practice of legal liability in the labor law of Ukraine [monograph] Kharkiv: Panov, 392 p.
20. Fossum J.A. 2014 *Labour Relations: Development, Structure, Process.* Mcgraw Hill Higher Education.
21. Salmerón-Manzano E., Salmerón-Manzano F. Worldwide Scientific Production Indexed by Scopus on Labour Relations. *Environments. MDPI.* Issue 5 (25). 1–14. DOI: 10.3390.
22. Lutsenko O. Bringing Civil Servants to Liability for Disciplinary Misconduct in Judicial Practice of Ukraine / O. Lutsenko // *Journal of Advanced Research in Law and Economics.* 2017. Vol. VIII, Issue 1(23). p. 103-112.
23. Cai Juna, Ilia A. Vasilyevb, Margarita P. Izmalkovac, Pang Dongmeia, Raisa I. Khalatova Problems of Proof in Football Clubs’ Disciplinary Liability for Match-Fixing: Practice of the Court of Arbitration for Sport (CAS) (2009–2014) – *Journal of Siberian Federal University. Humanities & Social Sciences* 3. 2019. Vol. 12, 343–362. DOI: 10.17516/1997-1370-0398.
24. Yaroshenko, O.M., Moskalenko, O.V., Velychko, L.Y., Kovrygin, V.S. Property civil law liability and material liability of employees for damage caused to an employer: On the basis of civil law of Ukraine – *Asia Life Sciences.* 2019. Issue 2. 735–748.
25. Ford, M. (2000) Continuity and change in Indonesian labour relations in the habibie interregnum. *Southeast Asian J. Soc. Sci.* 28, 59–88.

## STATE ADMINISTRATION OF THE SYSTEM OF INCLUSIVE EDUCATION IN UKRAINE: CURRENT CONDITION AND PROSPECTS FOR DEVELOPMENT

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**Annotation.** *Special attention is drawn in the article to the conditions and factors that contributed to the establishment and development of an inclusive educational environment in Ukraine during the last decade since our state ratified the UN Convention on the Rights of Persons with Disabilities. Research positions on condition and problems of inclusive education in Ukraine are considered, regulatory and strategic principles of state administration of inclusive education in our country are highlighted. The priority directions for further improvement of the state administration of the specified education have been determined.*

**Keywords:** *state administration, inclusive education, inclusive teaching, inclusive educational environment.*

**Introduction.** In 2009, Ukraine ratified the UN Convention “On the Rights of Persons with Disabilities” by the Law No. 1767-VI of 16.12.2009 [1], which became an important and actually starting stage on the way to reforming the education system of persons with special needs. For a long time in our country, there was an approach inherited from the Soviet past to the organization and implementation of the education of the specified categories of persons, which, although it underwent certain transformations, nevertheless remained unchanged in its essence, for which it quite often became the subject of remarks and criticism from specialists, in particular foreign ones, who actively developed and promoted the idea and principles of an inclusive school and education. So, for example, M. Roddy noted that Ukraine differs from most western democracies in that it has preserved the general system of special schools for children with various disabilities. At the same time, the professor emphasizes that these schools are an invaluable repository of knowledge and experience regarding these children. However, Ukraine is now on the verge of making serious decisions about inclusive education [2, p. 70]. L.I. Danylenko, reflecting on the general and specific aspects of inclusive education and inclusive school, noted that the development and functioning of a separate, special education system was always considered a manifestation of care for children with

special needs. However, the researcher quite rightly emphasizes, this vision of the special education system began to gradually change in most countries of the world. Knowledge, experience, equipped facilities are still of great importance, however, the segregation of students is currently considered unacceptable and violates the child's right to education. The general view of this issue is that the vast majority of children with special educational needs should study together with their peers in regular settings. One of the results of this approach is considered to be the creation of a single educational system that will cover students of different categories [3, p. 10]. A.A. Kolupaeva, O.M. Taranchenko rightly points out that from the time of the declaration of independence of Ukraine until the beginning of the 2000s, special education in Ukraine can be paradigmatically defined as a "state-centric" educational system with noticeable signs of institutionalization and strict regulation of the educational process. So, at the end of this post-Soviet period, special education was faced with a dilemma – whether to function inertially in a traditional stream of concepts, approaches to teaching and raising children with psychophysical disorders, and especially with disabilities, as passive objects of influence, knowledge-centrism, absolutization of developmental defects, underestimation of viable potential, or to fill their education with a new content of competence in order to optimize the life resource of each child [4, c.34]. The orientation of the Ukrainian state and society towards western, in particular European, values, as well as the active and purposeful position of concerned public representatives ensured such expected and necessary changes on the way to the formation and development of the national system of inclusive education. At the beginning of the XXI century, as A. Kolupaeva and O.M. Taranchenko noted, inclusive education is recognized by the international educational community as the most innovative movement in the education of democratic countries. At this time, in Ukraine, in the context of the new paradigm, public interest in improving the organizational and legal foundations of ensuring the right to education of children with special needs, ensuring the variability of obtaining an education of the appropriate level, and active development of a new methodology for the education of persons with special needs, based on the principles of child-centrism, is taking place, an active search for ways and means of their implementation is carried out [4, c.34]. During the last decade, a number of important scientific studies on the issues of inclusive education have been conducted in our country [5; 4; 3; 6, etc.], relevant specialized projects and programs have been introduced [7; 8], the legislative foundations for the implementation of the principles of inclusive education and the formation of an inclusive educational environment in Ukraine are laid. In view of the above, the relevance of the issue of state administration of the system of inclusive education in Ukraine cannot cause any doubts.

**Literature review.** Some problems and issues related to the state administration of the system of inclusive education were considered in the scientific works of N.Z. Sofiy, Yu.M. Naida, A.A. Kolupaeva, O.M. Taranchenko, O.G. Lys, Yu.P. Surmin, V.D. Bakumenko, E.O. Manjos and many others. Nevertheless, despite the considerable scientific interest in the issue of inclusive education, the attention to which of many researchers, specialists and public figures is drawn, its relevance does not decrease at all.



Thus, one of the fundamental aspects of ensuring the quality organization and effective functioning of the mechanism of inclusive education is the state administration of the system of this education. After all, it is obvious that despite, without exaggeration, the significant contribution of individual specialists, public activists, and institutions of civil society to the work of introducing ideas and principles of inclusion in the Ukrainian educational space, without appropriate state support it is practically impossible to implement the plan in full. After all, it is the state that forms the organizational and legal basis for the implementation of inclusive education, establishes guarantees and determines priorities for its functioning and development, coordinates and provides appropriate resources for measures aimed at the implementation and implementation of the principles and tools (means) of inclusive education. Most of the researchers recently focus mainly on pedagogical, psychological, psychologically-pedagogical, educational and methodological issues of inclusive education and pay a significantly less attention to the state-administrative aspects of its provision. Thus, the experts call one of the key factors in the formation of a quality system of inclusive education in Ukraine: the possibility of freely choosing an educational institution and, accordingly, the curriculum, taking into account the individual psychophysical characteristics of a child; application of stimulating measures for children's achievements in various areas of development; provision of both pedagogical and social protection, etc.

At the same time, the statist element in the system of factors that condition and determine the formation of the inclusive education system by most researchers, if not ignored, is highlighted in a fragmentary way. Such a situation, in our opinion, significantly actualizes the need to conduct a review of the relevant shifts, changes and transformations that have taken place in recent years in our state in the administration of the inclusive education system in Ukraine, as well as to determine the prospects for the further development of this administration. In view of the above, the purpose of the presented article is to reveal the conditions of administration of the inclusive education system in Ukraine and to determine the changes necessary for its further improvement and development.

**Methods.** In the process of preparing a scientific study, a number of both general and special methods of scientific knowledge were used, the application of which allowed to apply a comprehensive approach to the solution of the presented problems. Thus, with the help of the logical-semantic method, the essence and meaning of the concepts of "management" and "state administration" were revealed. The method of documentary analysis made it possible to characterize the norms of current legislation aimed at regulating social relations in the field of state administration of inclusive education. It was possible to provide an assessment of the current state of public administration in the relevant field using methods of analysis and modeling.

**Findings and discussions.** Starting scientific research, it is worth noting that management is a function of organized systems (biological, social, technical), which ensures the realization of the goal and maintenance of the activity regime, stability and development of certain structural elements. As an aspect of social life, social management is

a process of purposeful activity for making and implementing decisions or performing management functions in order to organize the effective interaction of an object and a subject in a certain system, taking into account changes in the state of the external environment [9, c.722-723]. One of the manifestations of social management is state administration, which spreads to a certain extent to all major spheres of social life, including the sphere of education. Carrying out certain transformations in the educational sphere, the Ukrainian authorities, however, for a long time did not pay special attention to the issues of inclusive education, despite the fact that international experience clearly testified to the usefulness and success of the implementation of inclusion and obtaining significant results both for persons with special needs and for society as a whole [10, p. 159]. However, at the beginning of the 2000s, important developments finally took place in terms of the launching initiatives for the modernization of the long-term functioning residential education system for children with psychophysical development disorders, definition of life strategies, improvement of social opportunities, competence, competitiveness, strengthening of flexibility and mobility of social behavior in order to a constructively transformative position and full integration into the social and cultural space. At the same time, it should be noted that most of these steps became possible not because of a change in the position of the state authorities regarding the provision of education for persons with special needs, but thanks to the persistence of the scientific and pedagogical community, non-governmental organizations, the parent community, with the financial support of international funds, a movement was started to create alternative institutions, educational and rehabilitation centers [4, p. 35].

One of the most vivid examples of active public activity in the direction of the implementation of ideas and principles of inclusive education in Ukraine in the first decade of the 2000s is the work of the All-Ukrainian Foundation “Step by Step”, the program goal of which is aimed at developing an effective model of inclusive education that would ensure successful education of children with special educational needs in the conditions of a general secondary education school with the appropriate support of other specialists and parents. A significant merit of this foundation’s activity is that it actively cooperated with state bodies and organizations, disseminating and clarifying the value and advantages of inclusive education at the governmental level. However, only after the ratification by the Ukrainian parliament in 2009 of the UN Convention “On the Rights of Persons with Disabilities” and the Optional Protocol to it, the period of activation of state support and ensuring the development of an inclusive education system began. One of the first national legal acts, which witnessed a change in state priorities towards inclusive education, was the Law of Ukraine “On General Secondary Education” (2010), the content of which was amended to declare the creation of appropriate conditions for children’s with special educational needs education, taking into account their individual needs in the conditions of inclusive education. In addition, in October 2010, the Ministry of Education and Culture of Ukraine approved the “Concept for the Development of Inclusive Education” [11], and in August 2011, the Government by its resolution approved the “Procedure for the Organization of Inclusive Education in General Secondary Education

Institutions” [12], in which, for the first time, at the official level, was established the system that defines the requirements for the organization of inclusive education in general educational institutions in order to realize the right of children with special educational needs to education at the place of residence, their socialization and integration into society, and the involvement of parents in the educational process. An important moment of the adoption of this procedure was that finally the authorities did not simply declare their commitment to the idea and principles of inclusive education, but established a system of specific forms and measures for the organization of this education.

Since 2010, the number of first-graders with special needs has grown significantly, and the reduction of special educational institutions has stopped. So, in the 2001-2002 academic year, the number of such institutions was 297, in the 2003-2004 academic year - 390, in the 2005-2006 academic year - 396, in the 2009-2010 academic year - 387 institutions. Compared to the previous decade, special educational institutions, including boarding ones, significantly expanded their functions, started to provide psychological and pedagogical support and social-pedagogical patronage (which contributed to the comprehensive support of families raising children with special educational needs), to provide comprehensive corrective and developmental support and rehabilitation of children with special needs (social, medical, physical training and health, labor) with the aim of their integration into the social environment [4, p.35].

Today, the forms and methods of inclusive education are actively spreading throughout Ukraine. The authorities are directing efforts to promote the integration of children with special features of psycho-physical development into the general educational space [13, p.59]. In particular, the Ministry of Education of Ukraine is working on the creation of a unified education system for persons with special educational needs, which includes inclusive education and education in the conditions of special educational institutions (special schools and educational rehabilitation centers). The network of special institutions of general secondary education decreased by 9 units compared to the previous year and in 2021/2022. There are 310 institutions (319 institutions in 2020/2021) with a contingent of 36,294 students (36,461 students in 2020/2021); 2,289 of which are orphans and children deprived of parental care; 80 – educational and rehabilitation centers (8,406 students) for children with complex developmental disorders; 230 – special schools – with a contingent of 27,888 students. 257 special institutions have boarding houses (boarding schools) where 29,881 students live, almost 2,066 of which are orphans and children deprived of parental care, 5,573 students come only to study; 1,429 children of preschool age, 34 of which are orphans and children deprived of parental care [14].

Among the most important steps in the direction of the development of an inclusive educational space, which have been implemented in Ukraine recently, should be considered the adoption of a number of legislative acts that specified and strengthened the intentions of the authorities on this path, in particular, this is the Law of Ukraine “On Education” of 05.09.2017 No. 2145-VIII, which is not only declares everyone’s equal access to education, but also explicitly states that education in Ukraine must be built on

the principle of equal opportunities for all, and that the fundamental principles of modern state policy in the field of education include: human-centeredness; rule of law; ensuring the quality of education and the quality of educational activities; ensuring equal access to education without discrimination on any grounds, including disability; development of an inclusive educational environment, including in educational institutions that are most accessible and closest to the place of residence of persons with special educational needs; providing universal design and smart adaptation [15]. Moreover, this law stipulates that state authorities and local self-government bodies: firstly, create conditions for ensuring the rights and opportunities of persons with special educational needs to obtain education at all educational levels, taking into account their individual needs, opportunities, abilities and interests; secondly, provide training of specialists to work with persons with special educational needs at all levels of education. For training, professional training or retraining of persons with special educational needs, types and forms of education are used, taking into account their needs and individual capabilities; create conditions for persons with special educational needs to receive education on an equal basis with other persons by means of adequate financial, personnel, material and technical support and provision of universal design and/or reasonable adaptation, which takes into account the individual needs and capabilities of such persons, defined in the individual development program [15]. At the same time, it is important that the education, upbringing and development of persons with special educational needs in pre-school, out-of-school and in general secondary education institutions are guaranteed at the level of the Law at the expense of state and local budgets, other not prohibited by law sources, taking into account the needs child, defined in the individual development program [15].

In addition to the Law “On Education”, for the last 10 years, the executive power has adopted a number of secondary legal acts, such as: Resolution of the CMU of 15.08.2011 No. 872 “On approval of the Procedure for organizing inclusive education in general educational institutions”, which was replaced on 15.09.2021 by the Resolution of the CMU “On approval of the Procedure for organizing inclusive education in institutions of general secondary education” No. 957; “On approval of the state standard of primary general education for children with special educational needs” of August 21, 2013 No. 607; “On Amendments to the Regulation on Preschool Educational Institution” of 07.29.2015 No. 530; “On the procedure and conditions for providing subventions from the state budget to local budgets for providing state support to persons with special educational needs” of February 14, 2017 No. 88; “On the approval of the Regulation on the inclusive resource center” of July 12, 2017 No. 545; “Some issues of creating resource centers supporting inclusive education and inclusive resource centers” of August 22, 2018 No. 617, etc.; orders of the Ministry of Education and Culture of Ukraine: “On approval of the Concept for the development of inclusive education” of 01.10.2010 No. 912; “On the approval of the Standard staffing standards of general educational institutions” of 12.06.2010 No. 1205; “On approval of the Regulation on special classes for teaching children with special educational needs in general educational institutions” of 09.12.2010

No. 1224; “On the approval of the Procedure for staffing inclusive groups in preschool educational institutions” of 06.02.2015 No. 104/52; “On the approval of the Plan of measures to ensure the right to education of children with special educational needs in general education institutions” of 12/31/2015 No. 1436; “On approval of the Standard curriculum for children with moderate and severe intellectual disabilities (primary school)” of 07/21/2017 No. 1081; “On approval of the Exemplary list of equipment for equipping offices of the inclusive resource center” of 05/03/2018 No. 447; “On approval of the typical educational program of special institutions of general secondary education of the III degree for children with special educational needs” of 06.21.2018 No. 668; “On approval of the typical educational program of special institutions of general secondary education of the I degree for children with special educational needs” of 06.25.2018 No. 693; “On approval of the typical educational program of special institutions of general secondary education of the II degree for children with special educational needs” of 07.26.2018 No. 813; “On approval of the typical educational program of primary education of special institutions of general secondary education for children with special educational needs” of 07.26.2018 No. 814, etc.

The study of the content of the above mentioned and many other official documents of a regulatory and legal nature is evidence that at present it is quite clearly aware and understands that the issue of the education of children with special features of physical, mental, psychophysical development is not a matter exclusively for parents, persons who replace them, individual teachers or educational institutions that provide educational services to such categories of children, and has a general societal significance and its positive and effective solution must be ensured, first of all, at the public-authority level. The current state of organizational and legal support for the development of the system of inclusive education in Ukraine can be characterized as being at the stage of active formation and development. It is very important that today, at the legislative level, not only the conceptual foundations of state policy on this path are established, the main guarantees and priorities for its implementation are announced, but also a number of specific activities, methods and ways for the inclusive education introduction and development in Ukraine are established. Thanks to the active by-law rule-making of the executive authorities, some imprecision, spaciousness and brevity of the laws in the regulation of issues of inclusive education are leveled and compensated for. The work of the Ministry of Education and Culture of Ukraine, which, in active cooperation with the public, continues to develop the strategic principles of state management of inclusive education deserves a favorable assessment. In particular, the ministry developed a project of the National Strategy for the Development of Inclusive Education for 2020-2030 and a plan of measures for its implementation. The purpose of this strategy development is to ensure uniform approaches in the education system of Ukraine, where every child will be covered by education and will be able to realize his or her potential. In the course of implementation, it is planned to solve a number of the following tasks:

- to identify and qualitatively evaluate persons with special needs among students;
- create conditions for training in districts or united communities for each person in

accordance with his or her special needs;

- to increase the teaching staff level of training to meet the needs of each student;
- to improve mechanisms for financing the education of persons with special needs;
- to ensure in educational institutions with the conditions for obtaining quality education for persons with disabilities [16].

It should also be noted the persistent and purposeful work of the Ministry of Education and Culture of Ukraine regarding the development of the system of inclusive resource centers (IRC) and ensuring their interaction with educational institutions. Thus, as of September 2020, 633 inclusive resource centers were opened to replace psychological, medical and pedagogical consultations (PMPK). In the 2019/2020 academic year, 35.14% of schools had inclusive classes. Almost 130,000 conclusions were provided to parents on the comprehensive psychological and pedagogical assessment of their children's development through the IRC Portal [16]. Thus, if earlier the employees of the Children's Health Center could be part of the teams accompanying children with special needs as involved external specialists, henceforth they are mandatory in the teams. Under such conditions, the formation of support teams for the development of individual development programs (IDP) of the child will be of a higher quality and the interaction of schools with the IRC will be significantly more effective. The director can also conclude a cooperation agreement between the IRC and the educational institution and involve IRC specialists in joint work. Within the scope of cooperation, the school will be able to invite IRC specialists to conduct seminars, trainings, master classes, as well as exchange experience and improve the qualifications of teachers. The school will use IRC resources for a better approach to the development of IDP, as well as the organization of an inclusive educational environment, the provision of psychological-pedagogical, correctional-developmental services, consulting teachers on the preparation of individual educational paths, modification/adaptation of educational programs [17].

In general, positively and approvingly assessing the trends and rates of development of inclusive education in Ukraine, it should be emphasized that the following are the important points that should be paid more careful attention and the solution of which should improve the management system of the mentioned education:

- material and financial support of educational institutions. In particular, the data of the "Research on the quality of inclusive education for children with special educational needs" (December 2020 - January 2021) indicate that for the majority of educators, teachers, and their assistants, one of the main problems of the full implementation of the tasks and principles of inclusive education is precisely the mismatch of material technical resources of institutions, those needs that accompany high-quality inclusive education. Also, in a number of educational institutions there are necessary material bases, but they need repair, renewal and improvement, however, according to the testimony of their management, the institutions do not have the finances for this [18]. It is clear that today, when there is a war in Ukraine as a result of the military invasion of the Russian Federation, it is quite difficult to talk about the need to increase the targeted financial support of educational institutions aimed at ensuring that their material bases are in line

with the needs of inclusive education. Nevertheless, we are convinced that this issue should be one of the priorities when determining the amount and articles of financing education in Ukraine;

- ensuring, firstly, uniform and consistent distribution of forms and methods of inclusive education throughout the territory of Ukraine, and secondly, personnel support of this educational process. In this context, A.O. Omelchenko rightly notes that according to the data of the State Statistics Service of Ukraine in our country, out of 7.6 million children from birth to 18 years of age, only 11.8 thousand children study in regular schools thanks to inclusive education. And this means, the researcher rightly emphasizes, that Ukraine lacks at least teachers for inclusive education. At the same time, A.O. Omelchenko notes, if the situation is more or less favorable in metropolitan educational institutions and larger populated places of Ukraine (Kharkiv, Dnipro, Odesa, Zhytomyr, Poltava), then in small places and villages the state of inclusive education is extremely critical. At best, children with special needs study at home with regular school teachers. It is clear that in this case there is nothing to say about the effective education of such children and their further socialization in society [19, p.125];

- ensuring the implementation of the principles, forms and methods of inclusive education in higher education. The problem is that today most, if not all, of the government's attention is focused on the introduction of inclusive education in institutions providing general secondary education, instead, the spread of inclusive space in higher education is limited to issues of adapting buildings and structures of higher education institutions to the needs of population groups with limited mobility (installation of ramps, elevators, etc.). However, even these requirements are not fulfilled in all institutions of higher education. It is obvious that the inclusiveness of a higher school cannot and should not be limited to the specified steps, it is necessary to provide the appropriate material, technological, methodological and other basis for joint education of persons with special educational needs with other students of higher education institutions. Most of this work should obviously be entrusted to institutions of higher education, however, the state (in the person of its competent bodies) should coordinate this work, control its quality and efficiency;

- promoting the development of an inclusive educational space by conducting extensive educational work among the population. Awareness of the educational needs of people with special physical, mental, and psychophysical development should not be limited to specialists who take part in the educational process with the participation of the specified categories of people, as well as their parents (or persons who perform parental duties and functions).

**Conclusions.** Summarizing the above, we can confidently say that today the state administration of the inclusive education system in Ukraine is moving in the right direction, which is generally consistent with international standards and principles in this field. At the same time, there are a number of questions regarding the state's creation of conditions for proper material, technical and personnel provision of inclusive education, regarding the balance and meaningfulness of approaches to the introduction of an inclusive

environment at various levels of education, etc.. Solving these problems should become a priority area of activity of the competent state bodies, which will provide favourable conditions for further improvement and development of the inclusive education system in Ukraine.

#### References:

1. On the ratification of the Convention on the Rights of Persons with Disabilities and the Optional Protocol to it (2009), Law of Ukraine №1767-VI
2. Bondar V. I. (2006) Modernization of special education in Ukraine: lessons for the future. Issue 3. P. 67-72.
3. Kolupaeva A. A., Sofiy N. Z., Naida Yu. M. and others. (2007) Inclusive school: features of organization and management. Kyiv. 128 p.
4. Kolupaeva A.A., Taranchenko O.M. Inclusive education: from basics to practice. [monograph]. ATOPOL LLC. 152 p.
5. Myskiv L. I. (2015) Administrative and legal principles of the implementation of inclusive education in Ukraine author's abstract. [Candidate dissertation, Kharkiv National University of Internal Interregional Academy of Personnel Management. Kyiv: 366 p.
6. Lys O.G. (2021) Administrative and legal regulation of inclusive education in preschool education institutions in Ukraine. [Candidate dissertation, Kharkiv National University of Internal Interregional Academy of Personnel Management. Kyiv: 240 p.
7. The project "Inclusive education: step by step" is implemented by the All-Ukrainian Foundation "Step by Step" with the support of the United States Agency for International Development USAID / All-Ukrainian Foundation "Step by Step" // URL: <http://www.ussf.kiev.ua/activeproject/6/#>
8. "Development of inclusive education in the Kharkiv region": an educational project of the Kharkiv State Administration // URL: <https://dniokh.gov.ua/?p=32299>
9. Surmin Yu. P., Bakumenko V. D., Mykhnenko A. M. and others (2010) Encyclopedic dictionary of public administration. Kyiv: NADU. 820 p.
10. Yatsyuk I. (2020) Inclusive education in the conditions of a modern educational institution. Nova ped. opinion. Issue 2. P. 159-161.
11. On the approval of the concept of development of inclusive education (2010), order of the Ministry of Education and Culture of № 912 URL: <https://mon.gov.ua/ua/npa/pro-zatverdzhennya-kontseptsii-rozvitku-inklyuzivnogo-navchannya>
12. The procedure for organizing inclusive education in general educational institutions (2011), Resolution of the CMU of August №872 // URL: <https://zakon.rada.gov.ua/laws/show/872-2011-%D0%BF#Text>
13. Manzhos E.O. (2019) Inclusive education at the current stage of educational development / Pedagogy of creative personality formation in higher and secondary schools. issue 62(1) P59-62.
14. Inclusive education: statistical data. official web portal of the Ministry of Education of Ukraine URL: <https://mon.gov.ua/ua/osvita/inklyuzivne-navchannya/>



statistichni-dani

15. On education (2017), Law of Ukraine №2145-VIII URL : <https://zakon.rada.gov.ua/laws/show/2145-19#Text>

16. Strategic directions for the development of inclusive education until 2030, official web portal of the Ministry of Education of Ukraine URL: <https://mon.gov.ua/ua/news/mon-rozrobilo-strategichni-napryami-rozvitku-inklyuzivnoyi-osviti-do-2030-roku>

17. Organization of inclusive education in 2022: State Education Quality Service of Ukraine URL: <https://sqe.gov.ua/inkluzyvne-navchannia-2022/>

18. Research on the quality of inclusive education for children with special educational needs (December 2020 - January 2021) / State Education Quality Service of Ukraine, SURGe Canada // URL: [https://mon.gov.ua/storage/app/media/inkluzyvne-navchannya/2021/04/02/Doslidzhennya\\_yakosti\\_inklyuzyvnoyi\\_osvity\\_1\\_02\\_04.pdf](https://mon.gov.ua/storage/app/media/inkluzyvne-navchannya/2021/04/02/Doslidzhennya_yakosti_inklyuzyvnoyi_osvity_1_02_04.pdf)

19. Omelchenko A. O. Problems and prospects for the development of inclusion in Ukrainian educational institutions. Bulletin of Luhansk National University named after Taras Shevchenko. Pedagogical Sciences. 1(332). 123–130. [https://doi.org/10.12958/2227-2844-2020-1\(332\)-123-130](https://doi.org/10.12958/2227-2844-2020-1(332)-123-130)

## **SCIENCES OF PHYSICAL EDUCATION**

### **CURRENT STATE AND PROSPECTS OF DEVELOPMENT OF THEORETICAL TRAINING IN SPORT**

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**Annotation.** *The article is devoted to the identification of problems of theoretical training in sports at the present stage and the establishment of possible prospects for its development. The need to specify the theoretical training in different groups of sports in the long-term improvement of the definition of the problem of substantiation of its structure and content.*

*The purpose of the study: to establish the current state of the problem of theoretical training in sports and areas for improvement.*

*Research methods: analysis, comparison, induction, deduction, systematization and generalization of data from scientific and methodological literature, legal documents and information resources of the Internet.*

*The presence of problems in accordance with the scientific and methodological support of theoretical training in sports was revealed.*

*As a basis for further improvement of the structure and content of theoretical training in specific sports was taken developed by MP Pitin's general concept of theoretical training in sports. Accordingly, the prospects for further research include the development of specific means of theoretical training of athletes in certain sports.*

**Keywords:** *sport, theoretical training, sports, modern stage.*

**Formulation of the problem.** To date, we are observing a fairly clear trend of growth in the sports results of participants in the Olympic Games, World Championships and other competitions. This is due to the fact that the system of training athletes as a whole and its individual parts at various stages of multi-year training is being improved [7].

In the system of multi-year improvement of athletes, theoretical training is an integral component [10, 11]. Theoretical knowledge at all stages of training contributes to the comprehensive development of athletes and the improvement of sports results [2, 3, 5].

Such authors as S. Belykh (2005) [1], A.A. Shakhov (2010) [14], Yu. A. Bryskin with co-authors. (2016-2021) [4], M.P. Pitin (2012-2015) and others, in their studies highlight various aspects of theoretical training in sports.

However, the implementation provisions of the main, at the moment, general concept of theoretical training, developed by M. P. Pitin in 2015, remain, in fact, aside from the practice of many types of sports.

The need for the specification of theoretical training in various groups of sports in long-term improvement determines the problem of substantiating its structure and content.

After all, it has been proven that theoretical training in sports should be similar, in accordance with the structure and content of competitive activity [3]. Unfortunately, scientific research in this direction is limited. The above conditions the need for further research.

**Analysis of recent research and publications.** It is known that for successful training and competition, athletes need to acquire theoretical knowledge, as well as gain practical experience. Therefore, this is one of the main tasks that is solved in the process of training athletes [6]. And it is in the course of theoretical training that these tasks are solved. It covers all aspects of knowledge (social, psychological, scientific, etc.) that directly affect the formation of the so-called “smart skill”. The request to improve theoretical training in various types of sports is due to the need for the athlete to understand the essence of sports activity, which inevitably leads to an increase in results in the chosen sport and contributes to the harmonious development of the athlete’s personality [8]. At the same time, there is no single opinion in scientific sources regarding the justification of its structure and content of theoretical training for the purpose of implementation in the educational and training process, despite its importance.

**Connection of work with scientific topics and plans.** The work is done in accordance with the Research Plan of the Department of Sports Theory and Methodology of Mykhailo Kotsiubynskyi Vinnytsia State Pedagogical University on the topic “Organizational and methodological principles of programming the training process of qualified and highly qualified athletes” for 2021–2025 (state registration number 0121U109550).

The purpose of the study is to establish the current state of the problem of theoretical training in sports and directions for its improvement.

Research methods: analysis, comparison, induction, deduction, systematization and generalization of data from scientific and methodical literature, regulatory and legal documents and information resources of the Internet.

**Research results and their discussion.** Many authors confirm the importance of theoretical training in their works [1, 2, 5, 6, 7, 8]. It involves the athlete’s mastering of special knowledge for his successful training and competition activities. Theoretical training includes knowledge of the history, theory and methodology of sports in general and a certain type of sport in particular, physiology and psychology, hygiene, biomechanics of physical exercises, medical control, rules of organization and refereeing of sports competitions. Theoretical training is carried out at educational and training classes

(lectures, conversations, studying cinematographs, watching videos), as well as during independent study of relevant literature [3, 5].

Also, this type of training is considered as a system of intellectual abilities and skills of coaches, who directly carry out the formation of beliefs and the development of the athlete's cognitive abilities in the process of his sports activities. Theoretical training is the basis of practical study and improvement of sports technique, physical and other types of training in sports [4,5].

However, this type of training is covered fragmentarily in the special literature. From the survey conducted by Y.F. Buylin, Yu.F. Kuramshin (1981) [5], whose participants were athletes of various sports, it is clear that, in their opinion, insufficient attention is paid to this type of training. So, for example, in sports games (tennis, basketball, football), athletes prefer sports improvement to obtaining certain knowledge [4].

Such scientists as A.Yu. Dyachenko (2005) [7], V.Yu. Boguslavskaya [3] insist on improving the principles of theoretical training in cycle sports as well.

Having analyzed the information about the state of theoretical training in various sports, which was obtained from training programs for DYSSH, SDYUSHOR and ShVSM, identifies a number of problems. Such as the inconsistency of the amount of training load for theoretical training during all years of training of athletes; uneven presentation of program material at different stages of preparation; lack of information regarding the control of the theoretical training of athletes; lack of methodological substantiation of recommendations on the use of means and methods of theoretical training.

A number of the above-mentioned problems became the impetus for the formulation by M. P. Pityn (2015) of the general concept of theoretical training in sports and the selection of four hierarchical components: the level of prerequisites (the system of training athletes and the guiding provisions of the pedagogical and educational and training processes), the level of the basis (the system of theoretical training, sections of training athletes and stages of multi-year sports improvement), level of implementation (principles, tasks, functions, implementation regulations, methods, means, forms, conditions of implementation, control and implementation-determining elements: separate sections of training athletes and specified stages of multi-year training); result level (cognitive, psychological, methodological, communicative and integral components) [5].

The continuation of the idea of improving theoretical training in sports was revealed in the works of V.Yu. Boguslavskaya (2016-2021). The author presented the conceptual provisions of theoretical training in cycle sports and their place in the system of training athletes and training and improving the qualifications of personnel in the field of physical culture and sports; substantiated the structure and content of the system of theoretical training of athletes at various stages of multi-year improvement in cyclical sports, and also improved the content of their implementation provisions by specifying the means and methods of theoretical training in accordance with the requirements of the sport.

In addition, in 2005 Yu.M. Shkrebtii proposed the differentiation of theoretical

information into such categories as: evaluative, diagnostic, educational, orientational, mobilizing, organizational-normative.

V.M. In 2016, Kostyukevich proposed dividing theoretical information into general theoretical (general scientific and methodological foundations of the theory of physical education and sports) and special theoretical (theoretical and methodological regularities of sports training of football players) [8].

In the literary sources analyzed by us, by substantiating scientific provisions regarding the formation of theoretical preparedness and the expediency of complex theoretical training of young athletes, approaches to improving the structure and content of theoretical training of fencers at the stage of preliminary basic training are presented. The content components of the information blocks were also systematized, and their priority was determined [2].

Certain attempts were made to optimize the theoretical and methodological provisions of the multi-year training system in sports games as well. Taking this into account, a number of problems are identified in modern sports theory, which were aimed at studying the peculiarities of the domestic and foreign construction of the process of long-term preparation of the sports reserve; justification of the optimal structure of the annual training cycles of young players; increasing the effectiveness of the process of training young athletes based on the use of information technologies. At the same time, it has been proven that there are no special programs with the help of which it would be possible to improve the assimilation of theoretical knowledge. In addition, there is a lack of theoretical and methodological approaches, the use of which would contribute to the effective introduction of these technologies into the real training process [6].

A study was conducted on theoretical training in weightlifting. For example, A. A. Orlov (2009) presented structural blocks of theoretical and technical training for girls aged 8-10. The block of theoretical knowledge, which young female athletes should familiarize themselves with, includes nine topics [6].

In addition, the data of some studies indicate that in working with young judokas there is a need to alternate physical exercises with theoretical classes, because this allows you to balance the educational and training process [7].

At the same time, we cannot agree that the development and implementation of S. Belykh's experimental methodology, which allowed the author to ensure the necessary level of technical and tactical preparedness of athletes for half a year by evaluating it with the help of a computer software and hardware system, had a significant impact on the theoretical part of training in kickboxing [1].

So, we can note that the improvement of theoretical training of athletes is still relevant, despite the attempts of some scientists to substantiate the structure and content and specify the means and methods of theoretical training in various sports at different stages of training [1, 2, 6].

**Conclusions.** The problem of the lack of adequate scientific and methodological support for theoretical training in most sports was revealed.

The basis for further improvement of the structure and content of theoretical training in

specific types of sports was taken developed by M.P. Pitynym general concept of theoretical training in sports. At the same time, for most types of sports (except cycling [3]), there is no practical implementation of this concept. There is also no specification of means of theoretical training of athletes.

Prospects for further research include the development of specified means of theoretical training of athletes in certain sports.

#### References:

1. Bielykh S. (2005) *Metodyka teoretychnoi pidhotovky kikkboksera*. [Young sports science of Ukraine]: zb. nauk. pr. z haluzi fiz. kultury ta sportu. Lviv, 2005. Vyp. 9, t. 1. S. 117–120.
2. Bohuslavska V. (2020) *Udoskonalennia teoretychnoi pidhotovlenosti vesluvalnyk na etapi poperednoi bazovoi pidhotovky shliakhom zastosuvannia avtorskykh interaktyvnykh zasobiv*. [Physical culture, sport and health of the nation]: zb. nauk. prats. Vinnytsk. derzh. ped. un-tu imeni Mykhaila Kotsiubynskoho. – Vinnytsia, 2020. Vyp. 9(28). S. 132–137.
3. Bohuslavska V.Iu. (2021) *Teoretychna pidhotovka sportsmeniv u tsyklichnykh vydakh sportu : monohrafiia / Viktoriia Bohuslavska, Yurii Briskin, Marian Pityn*. Lviv : LDUFK im. Ivana Boberskoho, 2021. 339 s.
4. Briskin Yu. A. (2016) *Problemy teoretychnoi pidhotovky v sporti / Yu. A. Briskin, M. P. Pityn, V. Yu. Bohuslavska // [Physical culture, sport and health of the nation]: zb. nauk. prats. Vinnytsk. derzh. ped. un-tu imeni Mykhaila Kotsiubynskoho. – Vinnytsia, 2016. Vyp. 1. S. 257–261.*
5. Builyn Yu.F. (1981) *Teoretycheskaia podhotovka unykykh sportsmenov / Yu.F. Builyn, Yu.F. Kuramshyn*. M.: Fyzkultura y sport, 1981. 193 s.
6. Holets A. V. (2007) *Tsennostno-smyslovye oryentatsyy kvalyfytsyrovannykh sportsmenov v protsesse mnoholetnei podhotovky (na prymerе sportyvnykh yhr) / Holets A. V. // [Pedagogy, psychology and medical and biological problems of physical education and sports]: nauk. monohr. / za red. S. S. Yermakova. Kh., 2007. № 11. S. 25–27.*
7. Diachenko A. Yu. (2005) *Systema vdoskonalennia spetsialnoi vytryvalosti kvalifikovanykh sportsmeniv v akademichnomu vesluvanni: avtoref. dys. ...d-ra nauk z fiz. vykhovannia ta sportu : [spets.] 24.00.01 „Olimpiiskyi i profesiynyi sport” / Diachenko Andrii Yuriiiovych ; NUFViSU. K., 2005. 39 s.*
8. Kostiukevych V.M. (2016) *Upravlenye trenirovochnym protsessom futbolystov v hodychnom tsykle podhotovky. / V.M. Kostiukevych. 2-e yzd., dopolnennoe y dorabotannoe Kyev: KNT, 2016 – 683 s.*
9. Orlov A. A. (2009) *Planuvannia teoretychnoi ta tekhnichnoi pidhotovky divchat 8–10 rokiv, yaki zaimaiutsia vazhkoiu atletykoiu / A. A. Orlov // Pedagogy, psychology and methodological and biological problems of physical education and sports: nauk. monohr./ za red. S.S.Iermakova. Kh., 2009. № 8. S.118-121.*
10. Pityn M. P. (2018) *Teoretyko-metodychni osnovy upravlinnia teoretychnoiu pidhotovkoiu sportsmeniv u systemi bahatorichnoho udoskonalennia / M. P. Pityn, Yu. A. Briskin, V. Yu. Bohuslavska // [Theoretical and methodological foundations of managing the process of training athletes of various qualifications] : monohrafiia / za zah. red. V. M. Kostiukevycha. Vinnytsia : Planer, 2018. S. 56–85*

## **MEDICINE AND DENTISTRY**

### **GENERAL MECHANISMS AND STRATEGIES FOR SOLVING THE PROBLEMS OF NEURODEGENERATION**

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***Annotation.*** *In neurodegenerative diseases, common mechanisms may reveal new therapeutic targets based on the protection, repair or regeneration of neurons, regardless of the etiology or localization of the pathology. The article discusses the main areas of mechanistic overlap in neurodegenerative diseases of the central nervous system: neuroinflammation, bioenergetics and metabolism, genetic contribution and neurovascular interactions. We summarize the important points of the discussion with an emphasis on the areas of research that are most innovative and promising in the treatment of neurodegeneration, but need further development.*

***Keywords:*** *neurodegeneration, genetics, neuroinflammation, neurovascular interaction.*

A wide range of neurodegenerative disorders affect the central nervous system (CNS), causing disruption of connections and communication between neurons that are integral to sensory, motor and cognitive processes, including vision, hearing, movement, speech, language, memory and others. This disruption of neuronal communication is characterized by progressive degradation of synapses and axons, which eventually leads to neuronal death. The incidence of neurodegeneration and dementia worldwide is predicted to increase dramatically as the population ages, posing a serious threat to global health care systems [1, 2]. Although neurodegenerative diseases are highly complex and may be etiologically diverse, identifying commonalities in disease mechanisms and pathologies may lead to a deeper understanding of the triggering events in neurodegeneration and provide opportunities for new pan-neurodegenerative therapeutic opportunities.

***Mechanisms of progression.*** It is no coincidence that as a person ages, the frequency of neurodegenerative diseases also increases, as homeostatic cellular mechanisms begin

to malfunction and new cellular functions associated with diseases arise. Neurodegeneration involves complex interactions between neighboring cells and their axonal projections; neurons have both proximal and distal regions, which have different cellular environments and, in turn, different mechanisms of disease pathology. In addition, the central nervous system does not always act in isolation; the peripheral nervous system (PNS) and the peripheral immune system are increasingly involved in CNS degeneration. Identifying commonalities at the molecular level will improve understanding of neurodegenerative events, which could then be used in the development of broad-spectrum therapeutics for neurodegenerative mechanisms in many diseases. To achieve this goal of widely used therapeutics for neurodegenerative diseases, some gaps in knowledge remain: the common molecular events in the early stages of disease progression, i.e. the initiating events that tip the scales in the amplification cascade, leading to neurodegeneration; events that occur and catalyze pre-existing neurodegenerative events; common pathological endpoints and more. Emphasis is placed on the following factors: environmental factors, neuroinflammation, metabolic stress, neurovascular communication, and genetic contribution to disease.

**Environmental contribution to neurodegeneration.** Environmental factors can profoundly influence cellular and epigenetic contributions to disease progression. For example, these factors include age, diet, exercise, and exposure to neurotoxic substances that can trigger and/or exacerbate the underlying neurodegenerative phenomena. Thus, environmental factors play a role in many of the common degenerative mechanisms discussed below. In many diseases, age is a major risk factor, and tissues consisting of postmitotic cells, such as neurons in the brain and retina, are particularly sensitive to the effects of aging [3]. Hallmarks of senescent cells include genomic instability, epigenetic changes, dysregulation of signaling pathways, and mitochondrial dysfunction. Changes that occur with age can affect the homeostatic functions of cells, making them susceptible to neurodegeneration. Other extrinsic factors, such as diet and exercise, appear to be decisive factors in maintaining CNS health [4, 5]. Micronutrients, such as vitamins and trace elements, are integral to many key biological processes, such as mitochondrial ATP production and immune responses, which in turn affect CNS physiology [4]. Recognizing the role that extrinsic factors play in degeneration and the impact on cellular mechanisms in the form of a described blow (i.e. signaling pathways such as neuroinflammation, metabolism and mitochondrial dysfunction) will help to develop new therapeutic strategies for neurodegenerative diseases.

**Neuroinflammation.** Inflammatory events affecting the CNS (what is sometimes called «neuroinflammation») have multifaceted effects that can be neuroprotective, neuroregenerative, and neurodegenerative, determined by location, timing, and duration. Inflammation outside the CNS involves the infiltration of circulating monocytes and other immune cells, whereas inflammation in the CNS is usually (but not always) independent of peripheral inflammatory infiltration and involves resident glia such as microglia and astrocytes [6]. Neuroinflammation in neurodegenerative diseases has always been considered simply a reaction of the system to other pathophysiological events. However,



emerging evidence from preclinical and clinical studies in a number of neurodegenerative diseases, including Alzheimer's disease (AD), Parkinson's disease (PD), and Huntington's disease, amyotrophic lateral sclerosis (ALS), and multiple sclerosis (MS), among others, have established that immune-mediated events can trigger pathogenesis and rule it [7-10].

Increasing age is associated with an increase in mild chronic inflammation or inflammatory senescence [11] due to impaired immune regulation [12], glia [13, 14] or metabolic homeostasis [15]. In humans, age leads to an increase in circulating inflammatory markers such as C-reactive protein and inflammatory cytokines. Dysfunctional inflammatory responses occurring only in aging may induce or simply exacerbate inflammatory events already occurring in neurodegeneration. Such dysfunction of immune surveillance (which is normally carried out by microglia and astrocytes) that occurs with age can be the initiator of long-term inflammation. In AD, a distinctive feature of the pathology is the presence of neuroinflammation in the brain, which is apparently manifested in the form of reactive responses of astrocytes and microglia [16]. Increased levels of pro-inflammatory cytokines in the brain of patients with bronchial asthma lead to the accumulation of beta-amyloid (A $\beta$ ) plaques and tau, which ultimately leads to neuronal loss [17]. Neuronal damage due to A $\beta$  accumulation exists in a continuous cycle in which the production of inflammatory cytokines triggers the release of neurotoxic A $\beta$ , which in turn triggers reactive microglia to release more pro-inflammatory cytokines [17]. In AD, microglia are the primary cell type that take up and proteolyze neurotoxic A $\beta$ . Because A $\beta$  plaques are difficult to break down, the efficiency of microglial clearance decreases over time, leading to increased amyloid and increased release of pro-inflammatory cytokines [17]. Thus, microglial reactions are probably neuroprotective in the early stage, but neurotoxic in the late stage of Alzheimer's disease [18].

In humans, the inheritance of the apolipoprotein E  $\epsilon$ 4 (APOE4) allele greatly increases the likelihood of developing Alzheimer's disease [19]. The reactive response of microglia and astrocytes in the brain is increased in patients and mouse models expressing the APOE4 allele. APOE4 alters the baseline proinflammatory response even in the absence of disease, suggesting that APOE4 may indeed induce dysfunctional inflammatory responses that trigger neurodegeneration. In addition, APOE4 correlates with dysfunctional microglial clearance of A $\beta$ . Although most people with APOE4 carry the genetic variant have an increased susceptibility to asthma, the effect size is smaller or absent in populations of people of African descent compared with Europeans or Chinese. For example, some non-industrial populations in South America appear to benefit from APOE4 to survive parasitic infection in early childhood, without apparent adverse effects associated with bronchial asthma in the elderly [20]. This lack of allele-disease association highlights how genetic variability, environmental factors, and epigenetics can influence gene-disease associations.

Similarly, in age-related macular degeneration (AMD) and glaucoma, APOE4 protects against the disease [21]. Reactive microglia in the retina have already been shown

to be pathological in glaucoma, so perhaps less reactive retinal glia are protective in APOE4 variants, whereas dysfunctional microglia in AD are detrimental. A deeper understanding of data from pathological conditions such as these will improve our understanding of glaucoma as a neurodegenerative disease and allow us to understand how neuroinflammatory events contribute to disease pathology in different human populations.

Not all disease-related mutations cause a direct response of cells to increase inflammatory mediators. In patients with ALS, genetic mutations of the enzyme superoxide dismutase (SOD1) account for about 5% of ALS cases. These mutations do not alter the basal transcript of microglia or astrocytes, but instead dramatically lower the astrocyte threshold for inflammation, causing them to respond more quickly and aggressively [22]. Such studies highlight the importance of studying prodromal and secondary inflammatory responses and functions in cells expressing disease-associated mutations.

In PD, as in bronchial asthma, protein clusters are a key pathological element; pathological examination revealed accumulation of  $\alpha$ -synuclein in Lewy bodies in patients with this disease [23]. These protein aggregates, which accumulate in the neurons of the substantia nigra, cannot be cleared, causing neurodegeneration. Since the discovery of a large number of reactive microglia in the postmortem brain tissue of patients with PD, it has been suggested that neuroinflammatory events may be the initial initiator of pathogenic mechanisms in PD. Similar to the dysfunctional neuroinflammatory mechanisms in AD, the question of the «missing link» can also be asked in PD: are neuroinflammatory events responsible for protein stacking, i.e. disease triggers, or are they secondary to protein aggregation? Interestingly, there are studies linking the use of non-steroidal anti-inflammatory drugs (NSAIDs) with the prevention or retardation of PD [24]. Similarly, the glucagon-like peptide receptor 1 agonist, NYL01, originally developed to combat inflammation in diabetes, has been shown to be beneficial in limiting microglial cytokine release and astrocyte reactivity in mouse models of PD [25] as well as in an occlusion glaucoma model. These results highlight neuroinflammation and systemic immune responses as active participants in disease progression, and the importance of understanding the crosstalk between the CNS, PNR, and vasculature in disease.

Although these results suggest that nonsteroidal anti-inflammatory drugs reduce the systemic inflammation associated with the progression of Parkinson's disease, they do not explain why anti-inflammatory therapies for neurodegenerative diseases in general are often ineffective. Indeed, anti-inflammatory or antioxidant therapies for neurodegenerative diseases have often been disappointing in clinical trials. An important factor in the role of neuroinflammation in neurodegeneration is time. It is possible that neuroinflammatory responses have a time and place for beneficial effects, but there are also acute deleterious effects when they are activated and persisted at the wrong time in the disease.

Infiltration of circulating immune cells through the breakdown of the blood-retinal barrier (BRB) may also provide some explanation for the autoimmune component of the

disease observed in animal models and in patients. Serum autoimmunoglobulins against heat shock proteins (HSPs) have been detected in the retina of glaucomatous animals and humans, and inoculation of rodents with HSP60 and HSP27 induces optic neuropathy [26]. The relationship between increased intraocular pressure (IOP), intact commensal microflora, and T cell activation may partially explain HSP-induced autoimmune retina; the absence of any signs of neurodegeneration after an increase in IOP was found in sterile mice [27]. These results suggest that host microflora responsive T cells mediate long-term optic nerve degeneration after injury.

How circulating immune cells influence resident glial responses and to what extent factors released by these cells contribute to neurodegeneration remain unclear. It is possible that the infiltrating cells will contribute to the regeneration of cell processes lost in acute retinal inflammation. In the PNS, the innate immune response to injury plays an important role in allowing sensory and motor neurons to regenerate axons back to their peripheral targets. Interestingly, a surge in IOP can also trigger an initial influx of macrophages and neutrophils that express molecules that can initially stimulate axonal growth [28], leading to questions about what determines the cellular release of pro-regenerative versus pro-degenerative molecules under conditions of stress and whether there are cells that can be predisposed to pro-regenerative states by releasing specific inflammatory factors. In glaucoma, the involvement of the inflammatory reaction in the progression of the disease is undeniable, but additional studies of the pleiotropic role of immune cells are needed.

Increasing knowledge of the role of astrocytes and microglia in the disease has led to the identification of a pro-reactive astrocyte approach (triggered by reactive microglia) that plays a key role in retinal degeneration by releasing toxic lipids. Astrocytes have been found to be important early responders to unilateral IOP elevation and optic nerve damage by redistributing metabolic resources at the site of damage to improve optic nerve health [29]. Understanding how the reactive states of astrocytes can induce disease states or play a protective role is fundamental to improving our understanding of inflammation in disease.

**Neurovascular connection.** The metabolic demands of the CNS require a tightly controlled supply of nutrients and metabolites to maintain cellular homeostasis. Neuronal activity (i.e., metabolic demand) and blood flow (i.e., metabolic supply) are linked in such a way that when neurons are activated, they cause an increase in blood flow to the area. This neurovascular connection is provided by several cell types that together constitute the neurovascular unit (NVU) [30], including vascular smooth muscle cells, pericytes, and endothelial cells, as well as astrocytes, microglia, and oligodendrocytes. In addition to metabolic support and waste removal, the main role of the NVU is to maintain the integrity of the blood-brain barrier (BBB), which provides controlled communication between the CNS and the periphery [31]. The blood-brain barrier protects the CNS from the systemic circulation and regulates the transport of serum factors and neurotoxins that can disrupt homeostasis. The blood-brain barrier is not passive; the presence of specialized tight junctions and transporters on the luminal and abluminal membranes along with membrane-bound enzymes makes it a highly selective and metabolic site of

exchange. A specialized glymphatic system of the CNS, which includes cerebrospinal fluid, interstitial fluid, and lymphatic vessels, facilitates the exchange of nutrients and signaling molecules with clearance products, such as proteins and solutes, in the brain parenchyma [31]. Recently, the ocular glymphatic system has been described as a pathway from the eye to the cerebrospinal fluid (CSF) that supports the removal of waste products from the retina and vitreous.

The function of the blood-brain barrier and the glymphatic system of brain and eye tissues is fundamental to the health of neurons and is relevant to the progression of neurodegenerative diseases. About 30% of patients with dementia suffer from vascular cognitive impairment and dementia (VCID), which is the second most common cause of dementia after AD [32]. VCID results from a stroke or other vascular damage that causes significant changes in cognitive function. VCID shares common comorbidities with other common dementias, such as AD. About 60% of patients with AD have significant evidence of VCID [32], and VCID may involve impaired A $\beta$  clearance, which is also seen in AD patients. Neurodegeneration also involves the compromise or destruction of the NVU, which may occur due to disruption of astrocyte connections with blood vessels. Increased reactivity of astrocytes and microglia leads to changes in morphology that can destabilize the NVU and disrupt the BBB, initiating a proinflammatory and prodegenerative cycle that includes invasion of the peripheral immune system.

A risk factor for AD, APOE may be protective for the peripheral vasculature, along with other molecules such as high-density lipoprotein (HDL). Clearly, there is a functional interaction between lipoproteins and how they modulate the vasculature and, in turn, their indirect effects on neurons in the central nervous system. APOE binds peripherally to high-density lipoprotein (HDL) and has been associated with A $\beta$  clearance in vitro [33]. Although HDL and APOE work together to help transport beta-amyloid into the vasculature, the apoE2 isoform is more efficient than other forms of APOE [33]. Thus, HDL may be a neuroprotective target in amyloid-induced diseases, as is APOE in  $\alpha$ -synuclein clearance in PD.

In glaucoma, although the vascular theory of the disease has caused some controversy for decades, the role of cells in the neurovascular junction in the disease has only recently become clear [34]. Glaucoma includes changes in the vascular network, both morphological (i.e. diameter of blood vessels, capillary loss) and functional [34]. Neurovascular communication in the optic nerve head and retina has been elegantly demonstrated by measuring hemodynamic responses to flickering light stimulation. Flicker-induced retinal vasodilation is reduced in glaucoma patients. Interestingly, a sharp increase in short-term IOP elevation does not affect the flicker response, suggesting that the decrease in the response in glaucoma is not solely due to changes in IOP. These data either suggest an underlying dysfunction in the neurovascular unit (NVU) through reduced neuronal activity or altered glial cell function [35].

Recently, the important role of pericytes in coordinating NVU responses in the retina has been highlighted as an integral component of retinal ganglion cell (RGC) homeostasis and function [34]. Pericytes are highly motile and interact to fine-tune blood

flow regulation and are damaged in ophthalmic hypertension. The paper emphasizes the p blood flow through retinal capillaries via interpericyte tunneling nanotubes (IP-TNTs), as visualized by in vivo imaging [34]. IP-TNTS pericytes are a key component of microcapillary ontial role of dysfunctional pericyte networks in neurodegeneration, as well as the availability of the retina as a model of CNS disease. In addition to retinal neurodegeneration, the pathogenic role of APOE4 in pericytes has also been shown in an in vitro cerebral amyloid angiography model, supporting the important role of pericyte function in neurodegenerative diseases. Understanding how pericytes respond to retinal disease may provide insights into the mechanisms of neurodegeneration in AD, PD, and traumatic brain injury.

**Genetic factors.** Characterization of the genes responsible for neurodegenerative diseases allows at least partial understanding of risk due to the inheritance of disease-associated alleles, and thus heritability is often used as a population measure of risk for a particular disease. Heritability is formally defined as the proportion of phenotypic variability due to genetic factors, although it does not mean that the inheritance of a gene causes the disease, nor will all patients with the disease carry the same risk alleles. The transition from heredity to disease mechanisms is a non-trivial task. One important question to consider is whether the risk allele is in a gene that directly affects the disease, i.e. is monogenic in nature (a «nuclear gene») [36]. One of the main reasons for this is that many neurodegenerative diseases are polygenic in nature [37]. The best way to determine the genetic risk of disease development is by compiling the Polygenic Risk Score (PRS). The score takes into account the small effects of many genetic variations that contribute to disease risk, better reflecting the polygenic nature of the disease. Indeed, the discovery of disease polygenicity may lead to the discovery of comorbidity between diseases and a common mechanism to combat a wide range of neurodegenerative diseases.

Genome-wide association studies are critical for identifying risk factors in AD [36] and studies have identified common pathways associated with genes such as APOE4 and the closely related lipoprotein CLU [38]. As noted above, APOE4 is a common risk factor for both AD and dementia in Parkinson's disease, and there is evidence that APOE genotype influences many aspects of protein aggregation, inflammation, and neurodegeneration in several different diseases, including AD and PD.

The influence of gender differences on neurodegeneration has complex mechanisms. In the central nervous system, sexual differences are generated by both long-term and short-term epigenetic changes caused by gonadal hormones and their interaction with transcriptional gene products found on sex chromosomes [39]. Thus, sex hormones and sex chromosomes play a role in the CNS response to disease and aging. Aging and disease are associated with changes in hormone levels such as testosterone, estradiol, progesterone and lower neuroactive metabolites [40]. The main examples of changes in hormone levels are pregnancy or menopause, both of which affect the aging process of the brain in women.

Of the studies that have focused on gender differences in neurodegenerative diseases, many have highlighted the distinct role of differences between male and female biology

in disease progression. In these studies, APOE4 increases the risk of AD more in women than in men, women are less likely to recover from stroke than men [41], estrogen has a neuroprotective effect in women [42], and there are gender differences in the use of cholinesterase inhibitors for the treatment of AD. Interestingly, sexual pathophysiological changes in neurodegenerative diseases are associated with populations of glial cells [39]. In addition, downstream metabolites of gonadal hormones can directly interact with hormone receptors on many types of glial cells, inducing specific neuroprotective responses [39]. In addition to the possible direct effects of sex hormones on neuronal health, sex hormones can affect the vasculature, which indirectly affects neuronal survival. Moreover, the vascular network can locally generate sex hormones. Sexual dimorphism is also abundant in glaucoma; there is increasing evidence that exposure to estrogen during life can alter the pathogenesis of glaucoma and that estrogen can exert a neuroprotective effect on the progression of primary open-angle glaucoma (POAG) [43].

**Conclusions.** In neurodegenerative diseases, common mechanisms may reveal new therapeutic targets based on the protection, repair or regeneration of neurons, regardless of the etiology or localization of the pathology. A discussion of the major areas of overlap in neurodegenerative diseases of the central nervous system, namely, neuroinflammation, bioenergetics and metabolism, genetic contributions, and neurovascular interactions, is an important discussion point with an emphasis on the areas of research that are most innovative and promising in the treatment of neurodegeneration, but need further development.

#### References:

1. Hurd M.D., Martorell P., Delavande A., Mullen K.J., Langa K.M. (2013) Monetary costs of dementia in the United States. *N Engl J Med.* 2013;368:1326–34.
2. (WHO) WHO. Global action plan on the public health response to dementia 2017–2025. 2017.
3. Nefodov O.O., Belenichev I.F., Fedchenko M.P., Popazova O.O., Ryzhenko V.P., Morozova O.V. (2022) Evaluation of methods of modeling and formation of experimental allergic encephalomyelitis. *Research Results in Pharmacology* 8(2): 37–48. <https://doi.org/10.3897/rrpharmacology.8.77361>
4. Businaro R., Vauzour D., Sarris J., Munch G., Gyengesi E., Brogelli L. and Zuzarte P. (2021) Therapeutic Opportunities for Food Supplements in Neurodegenerative Disease and Depression. *Front Nutr.* 2021;8:669846.
5. Marques-Aleixo I, Beleza J, Sampaio A, Stevanovic J, Coxito P, Goncalves I, Ascensao A, Magalhaes J. Preventive and Therapeutic Potential of Physical Exercise in Neurodegenerative Diseases. *Antioxid Redox Signal.* 2021;34:674–93.
6. Williams PA, Marsh-Armstrong N, Howell GR. Lasker IIA and Glaucomatous Neurodegeneration P. Neuroinflammation in glaucoma: A new opportunity. *Exp Eye Res.* 2017;157:20–7.
7. Onyango IG, Jauregui GV, Carna M, Bennett JP Jr, Stokin GB. Neuroinflammation in Alzheimer's Disease. *Biomedicines.* 2021;9(5):524.

8. Rasheed M, Liang J, Wang C, Deng Y, Chen Z. Epigenetic Regulation of Neuroinflammation in Parkinson's Disease. *Int J Mol Sci.* 2021;22(9):4956.e
9. Holbrook JA, Jarosz-Griffiths HH, Caseley E, Lara-Reyna S, Poulter JA, Williams-Gray CH, Peckham D and McDermott MF. Neurodegenerative Disease and the NLRP3 Inflammasome. *Front Pharmacol.* 2021;12:643254.
10. Han RT, Kim RD, Molofsky AV, Liddel SA. Astrocyte-immune cell interactions in physiology and pathology. *Immunity.* 2021;54:211–24.
11. Franceschi C, Bonafe M, Valensin S, Olivieri F, De Luca M, Ottaviani E, De Benedictis G. Inflamm-aging. An evolutionary perspective on immunosenescence. *Ann N Y Acad Sci.* 2000;908:244–54.
12. Pattabiraman G, Palasiewicz K, Galvin JP, Ucker DS. Aging-associated dysregulation of homeostatic immune response termination (and not initiation) *Aging Cell.* 2017;16:585–93.
13. Clarke LE, Liddel SA, Chakraborty C, Munch AE, Heiman M, Barres BA. Normal aging induces A1-like astrocyte reactivity. *Proc Natl Acad Sci U S A.* 2018;115:E1896–905.
14. Boisvert MM, Erikson GA, Shokhirev MN, Allen NJ. The Aging Astrocyte Transcriptome from Multiple Regions of the Mouse Brain. *Cell Rep.* 2018;22:269–85.
15. Lopez-Otin C, Blasco MA, Partridge L, Serrano M, Kroemer G. The hallmarks of aging. *Cell.* 2013;153:1194–217.
16. Nefodov O.O., Kalbus O.I., Larionov V.B. (2022) Current Mechanisms and Strategies for Pharmacotherapy of Remyelination in Multiple Sclerosis. *Ukr. Med. Chasopys.* N3(149). pp. 1-4.
17. Sinyor B, Mineo J, Ochner C. Alzheimer's Disease, Inflammation, and the Role of Antioxidants. *J Alzheimers Dis Rep.* 2020;4:175–83.
18. Lewcock JW, Schlepckow K, Di Paolo G, Tahirovic S, Monroe KM, Haass C. Emerging Microglia Biology Defines Novel Therapeutic Approaches for Alzheimer's Disease. *Neuron.* 2020;108:801–21.
19. Poirier J, Davignon J, Bouthillier D, Kogan S, Bertrand P, Gauthier S. Apolipoprotein E polymorphism and Alzheimer's disease. *Lancet.* 1993;342:697–9.
20. Trumble BC, Stieglitz J, Blackwell AD, Allayee H, Beheim B, Finch CE, Gurven M, Kaplan H. Apolipoprotein E4 is associated with improved cognitive function in Amazonian forager-horticulturalists with a high parasite burden. *FASEB J.* 2017;31:1508–15.
21. Margeta MA, Letcher SM, Igo RP, Jr, Cooke Bailey JN, Pasquale LR, Haines JL, Butovsky O, Wiggs JL and consortium N. Association of APOE With Primary Open-Angle Glaucoma Suggests a Protective Effect for APOE epsilon4. *Invest Ophthalmol Vis Sci.* 2020;61:3.
22. Burlaka B.S., Belenichev I.F., Nosach S.G., Nefedov A.A. Morpho-functional parameters of neurons in the sensorimotor cortex and neuroapoptosis under conditions of an induced experimental allergic encephalomyelitis in rats and a course of intranasal gel administration containing N-phrnylacetyl-L-prolylglycine (noopept). *Journal of*

Education, Health and Sport. Vol. 11(1). pp. 191-201.

23. Caggiu E, Arru G, Hosseini S, Niegowska M, Sechi G, Zarbo IR, Sechi LA. Inflammation, Infectious Triggers, and Parkinson's Disease. *Front Neurol.* 2019;10:122.

24. Shi W, Wang YM, Cheng NN, Chen BY, Li D. [Meta-analysis on the effect and adverse reaction on patients with osteoarthritis and rheumatoid arthritis treated with non-steroidal anti-inflammatory drugs] *Zhonghua Liu Xing Bing Xue Za Zhi.* 2003;24:1044–8.

25. Yun SP, Kam TI, Panicker N, Kim S, Oh Y, Park JS, Kwon SH, Park YJ, Karuppagounder SS, Park H, Kim S, Oh N, Kim NA, Lee S, Brahmachari S, Mao X, Lee JH, Kumar M, An D, Kang SU, Lee Y, Lee KC, Na DH, Kim D, Lee SH, Roschke VV, Liddelow SA, Mari Z, Barres BA, Dawson VL, Lee S, Dawson TM, Ko HS. Block of A1 astrocyte conversion by microglia is neuroprotective in models of Parkinson's disease. *Nat Med.* 2018;24:931–8.

26. Gramlich OW, Beck S, von Hohenstein-Blaul T, Boehm N, Ziegler N, Vetter A, Pfeiffer JM, Grus FH. Enhanced insight into the autoimmune component of glaucoma: IgG autoantibody accumulation and pro-inflammatory conditions in human glaucomatous retina. *PLoS ONE.* 2013;8:e57557.

27. Chen H, Cho KS, Vu THK, Shen CH, Kaur M, Chen G, Mathew R, McHam ML, Fazelat A, Lashkari K, Au NPB, Tse JKY, Li Y, Yu H, Yang L, Stein-Streilein J, Ma CHE, Woolf CJ, Whary MT, Jager MJ, Fox JG, Chen J, Chen DF. Commensal microflora-induced T cell responses mediate progressive neurodegeneration in glaucoma. *Nat Commun.* 2018;9:3209.

28. Kurimoto T, Yin Y, Omura K, Gilbert HY, Kim D, Cen LP, Moko L, Kugler S, Benowitz LI. Long-distance axon regeneration in the mature optic nerve: contributions of oncomodulin, cAMP, and pten gene deletion. *J Neurosci.* 2010;30:15654–63.

29. Cooper ML, Pasini S, Lambert WS, D'Alessandro KB, Yao V, Risner ML, Calkins DJ. Redistribution of metabolic resources through astrocyte networks mitigates neurodegenerative stress. *Proc Natl Acad Sci U S A.* 2020;117:18810–21.

30. Iadecola C. The Neurovascular Unit Coming of Age: A Journey through Neurovascular Coupling in Health and Disease. *Neuron.* 2017;96:17–42.

31. Natale G, Limanaqi F, Busceti CL, Mastroiacovo F, Nicoletti F, Puglisi-Allegra S, Fornai F. Glymphatic System as a Gateway to Connect Neurodegeneration From Periphery to CNS. *Front Neurosci.* 2021;15:639140.

32. Price BR, Norris CM, Sompol P, Wilcock DM. An emerging role of astrocytes in vascular contributions to cognitive impairment and dementia. *J Neurochem.* 2018;144:644–50.

33. Robert J, Button EB, Yuen B, Gilmour M, Kang K, Bahrabadi A, Stukas S, Zhao W, Kulic I, Wellington CL. Clearance of beta-amyloid is facilitated by apolipoprotein E and circulating high-density lipoproteins in bioengineered human vessels. *Elife.* 2017;6:e29595.

34. Alarcon-Martinez L, Villafranca-Baughman D, Quintero H, Kacerovsky JB, Dotigny F, Murai KK, Prat A, Drapeau P, Di Polo A. Interpericyte tunnelling nanotubes



regulate neurovascular coupling. *Nature*. 2020;585:91–5.

35. Hernandez MR, Miao H, Lukas T. Astrocytes in glaucomatous optic neuropathy. *Prog Brain Res*. 2008;173:353–73.

36. Sierksma A, Escott-Price V, De Strooper B. Translating genetic risk of Alzheimer’s disease into mechanistic insight and drug targets. *Science*. 2020;370:61–6.

37. Nefodov O.O., Kalbus O.I., Larionov V.B. Modern mechanisms and strategies of pharmacotherapy of remyelination in multiple sclerosis. *Ukr. Med. Chasopys*. №3(149). pp. 1-4.

38. Chen LH, Heng Mak TS, Fan Y, Yin Ho DT, Sham PC, Chu LW, Song YQ. Associations between CLU polymorphisms and memory performance: The role of serum lipids in Alzheimer’s disease. *J Psychiatr Res*. 2020;129:281–8.

39. Chowen JA, Garcia-Segura LM. Role of glial cells in the generation of sex differences in neurodegenerative diseases and brain aging. *Mech Ageing Dev*. 2021;196:111473.

40. Giatti S, Diviccaro S, Serafini MM, Caruso D, Garcia-Segura LM, Viviani B, Melcangi RC. Sex differences in steroid levels and steroidogenesis in the nervous system: Physiopathological role. *Front Neuroendocrinol*. 2020;56:100804.

41. Gargano JW, Wehner S, Reeves M. Sex differences in acute stroke care in a statewide stroke registry. *Stroke*. 2008;39:24–9.

42. Tierney MC, Oh P, Moineddin R, Greenblatt EM, Snow WG, Fisher RH, Iazzetta J, Hyslop PS and MacLusky NJ. A randomized double-blind trial of the effects of hormone therapy on delayed verbal recall in older women. *Psychoneuroendocrinology*. 2009;34:1065–74.

43. Fotesko K, Thomsen BSV, Kolko M, Vohra R. Girl power in glaucoma: the role of estrogen in primary open angle glaucoma. *Cell Mol Neurobiol*. 2020;42(1):41-57.

**COMPLEXITY OF THE FINAL CONTROL OF  
KNOWLEDGE IN THE DISCIPLINE “HUMAN ANATOMY”  
OF THE SECOND YEAR STUDENTS OF THE DNIPRO  
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**Annotation.** *The principle of a comprehensive approach to the final control of knowledge in the fundamental discipline “Human Anatomy” among students of the second year of a medical university is discussed. The proposed model is one of the methods of reducing subjectivity, preserving objectivity, integrity and openness of knowledge assessment in the context of implementing modern principles of higher education.*

**Keywords:** *final control of knowledge, exam in the discipline “Human Anatomy”, method of conducting the exam in fundamental disciplines in a medical university, objectivity of assessing student knowledge.*

**Discussion of the problem.** The discipline “Human Anatomy” is a basic discipline in the system of training specialists of higher medical institutions of all countries of the world. Comprehensive knowledge of human anatomy is the basis of understanding the basic principles of practical medicine, creates the basis for further mastery of clinical disciplines [1-3]. Any improvements to the system of fundamental anatomical knowledge should be aimed at the ability of students to carry out a comprehensive analysis of the structure of the human body, the formation of clinical thinking abilities as a basis for subsequent courses [11-12].

According to the programs of this educational discipline approved by the Dnipro State Medical University (DSMU) in the field of knowledge “Health care” for the specialty “Medicine” of the second master’s educational and scientific level of higher education, it contains 14.5 credits - that is 435 classroom hours of lectures, practical classes and independent work of students and 11.0 credits – 330 hours for the specialty “Dentistry” [4,5]. The materials of this discipline are an integral part of the Unified State Comprehensive Examination (USCE) for obtaining a bachelor’s or master’s degree in the

Ukrainian medical education system. A student begins to acquire fundamental knowledge of Human Anatomy in the first year of the department of anatomy, clinical anatomy and operative surgery of the Dnipro State Medical University, from the first days of study, during the first, second and third semesters. The medical student uses these fundamental knowledge bases of the structure of the human body in the future during the entire study, mastering special and clinical disciplines, consolidates them and receives new ones at the clinical departments of hospitals, hospitals and other medical institutions. The importance of high-quality in-depth knowledge of this discipline for a student of a medical university is important and unquestionable throughout the entire course of study, which draws the attention of teachers of both ukrainian and foreign medical institutions [2, 8, 11-14]. Therefore, their control is the basis for the continuation of a student's studies at a medical university, the quality of his studies in subsequent courses. The purpose of any exam is to check the student's level of assimilation of the program material in the discipline, the ability to use the acquired knowledge, abilities, skills, and other competences for the successful implementation of professional or further educational activities. The examination on Human Anatomy at the Department of anatomy, clinical anatomy and operative surgery of the Dnipro State Medical University is not only a test of the student's theoretical and practical knowledge, but also his self-organization, the ability to independently search and his own determination to master medical knowledge and skills.

**Own research.** At the Dnipro State Medical University, to test knowledge of the discipline "Human Anatomy", at the end of the third semester, a student takes an exam to control theoretical knowledge and practical skills. The component of the exam is a general assessment of the candidate's competencies and practical skills based on the principles of objectivity, structure, and approach to clinical situations. The mechanism, methodology and conditions for conducting a structured exam in the discipline "Human Anatomy" were approved by the licensed in 2019 Program of Academic Discipline and Criteria for Assessing Students' Knowledge at DSMU [4,5] and corresponds to the Regulation on the system of ensuring the quality of educational activities and the quality of higher education of the university [10]. This event takes place using technical and methodical means that strive to ensure compliance with the principles of objective assessment and overcoming the elements of subjectivism, adaptation to the requirements defined by the European system of credit ECTS credits within the framework of the credit transfer system of the organization of the educational process (ECTS).

The complexity of passing the exam in the discipline "Human Anatomy" for second-year students of DSMU consists in the combination of assessment of theoretical knowledge and practical skills, which are conducted in the form of different forms of control and by different controlling groups, which makes its subjectivity impossible. In the assessment, preference is given to standardized methods: testing and procedurally structured control of practical skills.

The development of methods of such control in the teaching of the discipline for both ukrainian and foreign students has been carried out by the teaching staff of the

Department of human anatomy and the Department of human anatomy, clinical anatomy and operative surgery for many years [6-9]. Its necessary criteria are the reduction of subjectivity, ensuring the openness of control, avoiding discrepancies between the control tasks and the content of the working curriculum in the academic discipline, evaluation that covers all means of learning, equality and impartiality of control due to the use of standardized questions when using computer testing, as well as the use of clear and transparent evaluation criteria [9].

Moving away from only an oral survey in the exam, which has a high level of subjective assessment of the student, became possible as a result of a significant expansion of the methodological and technical base of the Dnipro State Medical University, the use of new IT technologies in higher medical education [6].

Undergraduate assessment of students from the discipline “Human Anatomy”, if carried out on second course, to be held publicly. The methodological and organizational and technical security is taught by the professorial and clerical warehouse of the department, the methodological center of the university and the representatives of the dean’s office. A student receives admission to its completion after he has completed the curriculum.

One of two parts of the global assessment of knowledge is the assessment of theoretical knowledge in the form of test control in computer form, which is used not only by ukrainian, but also by foreign medical universities to test theoretical knowledge of Human Anatomy [12]. The first part of the warehouse is 67% of the overall assessment of the student’s knowledge of the discipline. The exam is held on the basis of the formed general center for the final assessment of knowledge of the Dnipro State Medical University. The lecture rooms of a large capacity serve as an auditorium base, as they give the opportunity for reliable and safe minds to accommodate health workers, providing the necessary sanitary standards (including the front COVID period). Part of the organizational visits to the testing is to secure the skin student on an encrypted landing site with a laptop with the previously approved the MyTestStudent program, which is used to perform the test task.

Administrative control of testing is carried out with the help of teachers of the department, representatives of the dean’s office and IT specialists of the Dnipro State Medical University. The teaching and technical staff act as observers and technical secretaries, checking the identity of the student, his placement in accordance with the seating scheme, the absence of external communication devices, timely reporting when there is a malfunction of the computer program during the exam. During the entire testing, the student’s work performance is video recorded on his laptop and the general video recording of the attestation process in the room. Test answers are immediately forwarded and processed on the main server. All these means make subjective assessment and external help impossible for any of the students.

Both ukrainian and foreign students perform the tasks under the same conditions, during the specified period of time. For foreign students, the test is conducted in English and an additional 20 minutes is provided, taking into account the possible language

barrier. The methodological basis of the test task includes 100 tasks from the discipline, which include situational tasks, answers to theoretical questions and graphic images. 1 minute is allotted for each task. Experience has shown that this time is enough with a margin in order to find the correct answer to the theoretical question, and to the graphic, and to the situational test problem. It turned out that a successful student completes the test exam work much earlier than the suggested time, using no more than 40-50 minutes.

Situational test problems are close to clinical cases and contain five short suggested answers, only one of which is correct. They reveal both knowledge of the anatomical structure and acquired practical skills. The graphic task is presented in the form of a drawing of a part of the body, the external or internal structure of a human organ with numerical designations. The student must find on it the anatomical structure according to the question and write down the correct number in the answer table. This part of the test control reveals the visual perception of the studied material, which is also the basis of practical knowledge of Human Anatomy. The theoretical task of the test contains questions and extended answers, among which you need to find the correct ones and show their connection with the question. In this case, there may be several of them, so each correct one is counted with a corresponding point. Test tasks include international anatomical nomenclature, which reveals knowledge of Ukrainian, Latin or English (for foreign students) names of structures in the structure of the human body.

The transparency of the methodical part of the test control is ensured by many factors. First, in order to prepare for this part of the exam, the student has access to the database of situational test tasks posted on the website of the leading department and on the website of the educational and scientific department of independent testing of students' knowledge and monitoring of the quality of education of DSMU. Therefore, the student has round-the-clock access to the content of meaningful test tasks for self-training and self-checking. Secondly, during the study period, the student uses workbooks, which contain drawings of the anatomical structure of body parts, organs and structures, which are then used to create examination test tasks. In them, the student independently or with the help of the teacher finds the correct names and writes them down according to the anatomical nomenclature. In order to improve both the visual perception of the structure of the human body and the acquisition of practical knowledge, at each practical session the teacher demonstrates all anatomical structures in accordance with the training program on dummies, ready-made dry and wet preparations, 3D anatomical atlases. Thirdly, the student acquires knowledge of theoretical issues during classroom work with the teacher, independent work and consultations, which is also an integral component of the open content of exam preparation.

The second component of the final exam in the discipline "Human Anatomy" - 33% of the component grade - are the points from the current control of knowledge of the classroom and independent work of the student, obtained during three semesters of its study. The evaluation of this work includes a current check of theoretical knowledge and practical skills that the student confirmed at each practical and seminar (final thematic) session. The evaluation is performed by the professor-teaching staff of the department.

At the same time, all types of work and the list of competencies provided by the curriculum of the academic discipline and methodical development for studying the topic are taken into account. The student must receive a grade in each topic. The criteria of this assessment are reflected in the curriculum of the discipline “Human Anatomy” [4,5].

The results of the assessment of this part of the work are documented in the Journal of students’ attendance and performance records and in the Electronic Journal of the Dnipro State Medical University, developed for each discipline, each course, and each ukrainian or foreign student. This journal contains the already calculated points of each grade for each lesson, so the student can already see his level of knowledge according to the European credit-module system without recalculating the grade-point. In the Electronic Journal, the teacher assigns a grade for each practical or seminar session with a marked topic and date. Therefore, you can track information about all studied topics in the discipline, your progress, unsatisfactory grades or missed classes. Thus, every student, logging into his own account, can monitor his academic level of knowledge at any time during his studies.

During the period of study at the department of the discipline “Human Anatomy”, in classroom time at the seminar session, the teacher monitors the assimilation of theoretical knowledge and practical skills of meaningful sections of the discipline with the help of the MyTestStudent computer program. They are the basis of the student’s admission to writing both the final topic and the general assessment of the student’s knowledge of the discipline. Errors in the preparation of the test control are analyzed at each practical session with the teacher’s explanations and refined by the student’s independent work. For this purpose, in the test tasks of the discipline performed in the MyTestStudent program, a “learning mode” is provided, when the correct option will be indicated after each answer to an error. In his free time, during independent work, the student can check and refine his own level of assimilation of the material.

At the end of studying a discipline in the test mode, using the same MyTestStudent program, the student can check the level of knowledge of the discipline, and the teacher can determine the possibility of admission to the test part of the final exam or his possible exam score. At the same time, the student is aware in advance of the depth of his knowledge and has time to refine the shortcomings.

A student of higher education who received an unsatisfactory grade when taking the final exam in a discipline or due to absenteeism without valid reasons, has two more attempts to reschedule and only after the last unsatisfactory grade is counted from the DSMU. Those students who, for a valid reason (documentally confirmed), did not take the exam within the specified time, receive an additional date for taking it in the form of an individual session.

**Conclusions.** The complexity of conducting the final exam in the discipline “Human Anatomy” in the second year of study at the Dnipro State Medical University showed positive aspects in reducing the subjectivity of evaluating the student’s work, the possibility of comprehensive disclosure of knowledge and provided the student with the opportunity to independently control it during the period of study. The objectivity of

control is ensured by the following components:

- 1) evaluation of theoretical knowledge and acquisition of practical skills is carried out not by one, but by several teachers of the department, different in each semester;
- 2) written test control takes place not at the department, but on the basis of the general center for the final assessment of knowledge of the Dnipro State Medical University;
- 3) the student can see the current scores that are included in the evaluation of the final control in the electronic journal of the Dnipro State Medical University;
- 4) the methodological base of tasks is complex and includes situational test tasks, theoretical questions and a block of practical skills;
- 5) the exam tasks are posted on the website of the department and on the website of the methodological center of the Dnipro State Medical University, available 24 hours a day and during any period of study;
- 6) the student has three attempts to pass the exam and the possibility of postponement in case of a good reason;
- 7) before the final test control, the student has the opportunity to check his own knowledge and readiness to take the exam using the MyTestStudent computer program.

Taking into account the above, it can be said that the used complexity of the final control of knowledge in the discipline “Human Anatomy” for second-year students of the Dnipro State Medical University serves as one of the methods of objectivity, integrity and openness of knowledge assessment in the context of the implementation of modern principles of higher education.

#### References:

1. Orsini E., Quaranta M., Adalgisa M.G., Mongiorgi S., Cocco L., Billi A. M., Manzoli L. and Ratti S. (2022). Near-Peer Teaching in Human Anatomy from a Tutors’ Perspective: An Eighteen-Year-Old Experience at the University of Bologna. *International Journal of Environmental Research and Public Health*. 2022. 19 (398). pp.1-17.
2. H. Kyryk, R. Borys, M. Michalevich (2020). The practice of teaching the basic discipline “Human Anatomy” to foreign students. *Medical education*. 2020. 4. p. 68-72.
3. Gareth Jones David. (2000). What Is Anatomy. Implications for Anatomy as a Discipline and for Clinical Anatomy as a Journal. –*Clinical Anatomy*. 2000. 13. pp.151–154.
4. Dovgal G., Kramar S. (2019). Program of the Educational discipline “Human Anatomy”. The second master’s\_educational-scientific level of training in the field of knowledge “Health care” specialty “Medicine”. SI “Dnipropetrovsk Medical Academy of Health Ministry of Ukraine”. 2019. 92 p. // <https://213.dmu.edu.ua/home>.
5. Dovgal G., Zharikov M. (2019). Program of the Educational discipline “Human Anatomy”. The second master’s\_educational-scientific level of training in the field of knowledge “Health care” specialty “Dentistry”. SI “Dnipropetrovsk Medical Academy of Health Ministry of Ukraine”. 2019. 68 p. // <https://213.dmu.edu.ua/home>.
6. Kuznetsova O., Nefedova O., Shevchenko I. (2021). The introduction of innovative

technologies in the remote presentation of the material of practical classes in a medical university. *Modern Science. Moderní věda*. 2021. 1 (3). p. 115-121.

7. Dovgal G., Zharikov M., Dovgal M. (2021). Experience in the organization of the educational process at the Department of Human Anatomy of the Dnipro State Medical University in the conditions of distance education. *Morphology*. 2021. 3. (15). p. 187-190.

8. Kuznetsova O., Nefedova O., Zadesenets I. (2019). Increasing the efficiency of the educational process in a medical university for English-speaking students. *Modern Science. Moderní věda*. 2019. 3 (6). p. 106-111.

9. Dovgal G., Dovgal M., Zharikov M., Abdul-Ogly L., Kramar S. (2017). The system of assessing the knowledge of students at the Department of Human Anatomy of the Dnipropetrovsk Medical Academy of the Ministry of Health of Ukraine. *Herald of problems of biology and medicine*. 2017. 2. p. 209-212.

10. Regulations on the system of ensuring the quality of educational activities and the quality of higher education (system of internal quality assurance) in the State institution "Dnipro Medical Academy of the Ministry of Health of Ukraine dated 12.27.2018, protocol No. 5. // [https:// drive.google.com / drive/ folders/ 1YiBJ9jn6W88GZ \\_ tUsPQoWyskCZrhXFab](https://drive.google.com/drive/folders/1YiBJ9jn6W88GZ_tUsPQoWyskCZrhXFab).

11. Li Ma. (2018) Current Problems and Improvements in Anatomy Teaching. *Advances in Social Science. Education and Humanities Research*. China, Shaanxi University of Traditional Chinese Medicine. 2018. V. 221. pp. 201-205.

12. Mota, M. F.; Mata, F. R., Aversi-Ferreira, T. A. (2010). Constructivist pedagogic method used in the teaching of human anatomy. *Int. J. Morphol.* 2010. 28(2):369-374.

13. Pallab K. Ganguly. (2010). Teaching and Learning of Anatomy in the 21st Century: Direction and the Strategies. *The Open Medical Education Journal*, 2010. V3. pp. 5-10.

14. Nagar S.K., Malukar O., Pragapati V., Ganatra D., Rathwa A. (2012). Approval of methods of teaching anatomy. *NATJ MED RES*. 2012. 21 (1). pp. 111-114.



## MULTIPLE SCLEROSIS: FEATURES OF THE COURSE OF THE DISEASE

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**Annotation.** *In this article, we focused our attention on some issues that need to be resolved. For a correct understanding of the direction of development of pharmacotherapy of multiple sclerosis, it is necessary to focus on deepening knowledge about the subtleties of the mechanisms of multiple sclerosis, in this case, the ways of remyelination. In addition, we have marked, discussed and summarized the manifestations and most frequent complications of neurodegenerative diseases.*

**Keywords:** *multiple sclerosis, course, complications, disability, neurodegeneration.*

Multiple sclerosis (MS) is the most common demyelinating disease of the central nervous system, which mainly affects young people of working age (16-45 years) and quickly leads to disability, therefore it is one of the urgent issues of modern neurology [1]. Over the past two decades, there has been an increase in the prevalence of MS in certain regions, an increase in the number of cases, and a change in its age limits both in the world and in Ukraine.

According to the WHO, among neurological diseases, MS is the main cause of persistent disability in young people. After 10 years from the onset of the disease, 30-37% of patients are able to move only with external help, 50% of patients have difficulties in performing professional duties, more than 80% of patients are forced to change jobs. After 15 years, only 50% of patients retain the ability to work, take care of themselves and move freely without assistance. Mortality from MS is on average 2 cases per 100,000 population per year [2].

According to the prevalence of MS in the world, 3 zones are distinguished: high-risk zone - prevalence of more than 50 cases per 100,000 population (northern regions of the USA, southern Canada, southern Australia, New Zealand, northern and central Europe); zone of medium risk - prevalence from 10 to 50 cases per 100,000 population (southern USA, some areas of central and northern Europe, eastern and southern Europe, the last territory of Australia); low-risk zone – prevalence of less than 10 cases per 100,000

population (Central and South America, Asia, Africa, Oceania) [3].

Epidemiological data on MS worldwide are fragmented and mainly available for high-income countries.

As of 2019, there were about 3.9 million MS patients in the world compared to 2.1 million patients in 2008. MS is currently diagnosed in any region of the world. The highest incidence rates were observed in the countries of North America and Europe (140 and 108 per 100,000 population, respectively), the lowest in Central and South Africa and East Asia (2.1–2.2 per 100,000 population). The highest prevalence of MS among European countries was recorded in Sweden (189 per 100,000), the lowest in Albania (22 per 100,000 population). The prevalence of MS varies according to geographic latitude. For example, among South American countries, Argentina has the highest incidence rate (18 per 100,000 population), while Ecuador has the lowest (3.2 per 100,000 population). The ratio of women to men among people with MS is 2:1 and is stable compared to 2018. However, in some countries this ratio is 3:1 (East Asia); 2.6:1 (America). In 2–6% of patients diagnosed with MS, the age is younger than 18 years, patients older than 59 years are found in 0.6% of cases [5].

The problem of MS is extremely relevant in Ukraine, as MS is the second most disabling disease among diseases of the nervous system [5].

According to the Ministry of Health of Ukraine, in recent years there has been a clear trend towards an increase in the incidence of MS. If as of 2005, there were 18,394 people (48.4 per 100,000 population) diagnosed with MS in Ukraine, including 1,145 new cases (3 cases per 100,000 population), in 2018, 20,674 were registered among the adult population in Ukraine patients with PC, which is 55.3 per 100,000 population, of which 1,196 residents became ill with MS for the first time, which is 3.2 per 100,000 population. The highest prevalence in 2013 was registered in Volyn (101.0 per 100,000 population), Ternopil (88.5 per 100,000 population), Poltava (76.8 per 100,000 population) regions, the lowest in Kirovohrad (27.4 per 100 thousand population), Donetsk (28.2 per 100 thousand population) and Odesa (26.5 per 100 thousand population) regions. The highest incidence of MS in 2013 was noted in Ivano-Frankivsk (5.5 per 100,000 population), Vinnytsia (4.7 per 100,000 population), Volyn (4.5 per 100,000 population) and Khmelnytskyi regions (4.1 per 100,000 population), the lowest — in Donetsk (1.8 per 100,000 population), Odesa, Mykolaiv (2.0 per 100,000 population) regions and the city of Sevastopol (0.6 per 100,000 population) [6].

MS is considered a disease with an unknown etiology, which develops under the influence of various factors, which can be endogenous - genetic predisposition, or exogenous - a wide range of external factors, which is supplemented with the results of new research.

MS is not a hereditary disease, but the results of observations indicate the presence of a certain hereditary (genetic) predisposition [7].

According to genetic and chromosomal studies, one of the genetic determinants of MS is the human leukocyte antigen (HLA) genes located on the 6th chromosome. HLA is necessary for the recognition of foreign substances by T-lymphocytes. MS susceptibility

is associated with the HLA-DR2HLA class II allele and the corresponding haplotype HLA-DRB1\*4501, HLA-DQA1\*0102, HLA-DQB1\*0602. Further attempts to localize the genetic defect in the DR-DQ region were unsuccessful due to strong splicing of genes in this region [8]. The analysis of a number of other candidate genes, which are important in the mechanisms of implementation of the immune response, made it possible to establish the existence of additional links of the genetic system of susceptibility to MS. Such links include the genes of a special family of anti-inflammatory cytokines - TNF, for which the predominance of certain “unfavorable” alleles in the group of MS patients has been shown. Since TNF genes are closely linked to the HLA-DR locus on the 6th chromosome, the specified specific distribution of TNF alleles may to some extent be due to the existence of a reliable association between alleles of the HLA complex and MS. Another gene for susceptibility to MS is the b-chain gene of T-lymphocyte antigen-recognition receptors on the 7th chromosome: the association of “unfavorable” alleles of this gene with the progressive form of MS and EAE has been shown, especially in case of combined inheritance with certain alleles of the HLA complex [9].

So, from the given data, it can be said that the current level of knowledge corresponds to the idea of an “orchestra” of HCG genes, which are in unbalanced vaccination and epistatic interaction, regulating the involvement of each other in the formation of susceptibility to MS.

Epigenetic regulation, which is not related to changes in the nucleotide sequence of the genome, but which affects the level of gene transcription through covalent modification of DNA or histone proteins, and the occurrence of spontaneous genetic changes, such as chromosomal aberrations or somatic rearrangements of genes, is probably also important for the development of MS. T-cell receptors and immunoglobulins [10].

External factors in the development of MS have a modifying effect and can be divided into groups: geographical (climate, geographical zone), infectious (presence of micro-epidemics and spatio-temporal clusters, Epstein-Barr virus, viruses of childhood infections, chronic bacterial infections of the nasopharynx, viruses of the herpes group and influenza, retroviruses), intoxications (organic solvents, gasoline and its processing products, toxic chemicals, environmental characteristics of the area of residence), lifestyle (predominance of animal fats and proteins (meat) in the diet, deficiency in the diet of vitamin D and vitamin A, chronic psycho-emotional stress) [11].

Currently, infections are considered to be the most well-founded external risk factors. In favor of a viral etiology of MS, the described epidemic outbreaks of the disease, the connection of its debut or exacerbation with a previous viral infection, the creation of various virus-induced EAE models, and the identification of viruses and antiviral antibodies in patients testify. As proof of the viral concept of MS, the authors of numerous clinical studies cite data on an increase in the titer of antibodies to measles, rubella, mumps, chicken pox, herpes simplex, influenza, and parainfluenza viruses [12]. Hypothetically, contact with the virus during the fetal period or in early childhood is assumed, with subsequent persistence of the virus and the development of the disease after a long latent period. The onset of MS is often associated with the Epstein-Barr virus, which

most likely provokes or simulates the autoimmune process in MS. Obviously, the autoimmune process is “triggered” not by one specific virus, but by a combination of them or an as yet unknown virus [13].

Both hereditary and external factors have not only etiological significance, but also form the originality of the phenotypic manifestations of the pathological process, that is, the features of the clinical course of the disease. Also, there are a number of factors, for example, brain injury, pregnancy, children’s age, which are not causal, but significantly affect the development of the clinical picture.

Despite the fact that the processes that occur in MS in the central nervous system require further study, the fact that immune autoaggression with damage to myelin and axons plays an important role in the development of the disease is indisputable []. It is axonal damage in MS that leads to the formation of irreversible neurological deficits and increasing disability [14].

In the basis of the pathogenesis of MS, the main processes are inflammation and neurodegeneration, which is manifested by diffuse damage of axons and apoptosis of neurons [15]. MS is manifested by inflammatory processes, as a result of which there is a functional and structural reorganization of the cellular composition of the CNS, which subsequently provokes degenerative changes [16].

Conventionally, several successive stages can be distinguished in the development of MS:

I - the development of immunological reactions in the periphery and in the central nervous system;

II - demyelination;

III - axonal degeneration.

It has been proven that potentially aggressive T-cells, specific for myelin basic protein and other CNS antigens, exist in the normal immune system, in minimal numbers and in an inactive state [17]. The above factors act as activators (triggers) of autoreactive T-lymphocytes. Antigen-activated Th cells with CD4 receptors specific for epitopes of myelin and ODC with the help of adhesive molecules (vascular cell adhesion molecules, intercellular adhesion molecules and selectins) and cytokines attach to the endothelium of BBB vessels, increase its permeability and penetrate into the CNS, causing infiltration of the perivascular space by Th-cells due to modification of the intercellular contacts of the BBB by cytokines [18].

T-lymphocytes are reactivated after interaction with antigen-presenting macrophages of the CNS, which carry myelin antigens on their surface. CD4<sup>+</sup> T-cells are particularly interesting in the pathology of MS, as they can differentiate into both pro-inflammatory Th-1 and Th-17, and anti-inflammatory Th-2, or T-regulatory cells, depending on the microenvironment and stimulating cytokines. In MS patients, CD4<sup>+</sup> T-cells tend to differentiate into Th-1 and/or Th-17, which are not only pro-inflammatory, but even potentially neurotoxic. The main targets of aggressive T cells and cytokines are myelin-producing cells, ODCs, myelin and neurons [19]. Activated T-cells and macrophages and microglia cells, which are secondarily involved in the process, secrete various

pro-inflammatory cytokines, which have the ability to induce adhesive receptors on endothelial and immune cells, as well as enhance the migration of the corresponding immunocompetent cells to the focus of inflammation. The activity of inflammation correlates with the level of density of adhesive molecules. Cytokine production secondarily increases BBB permeability. Antigen-presenting cells are included in the process sequentially: first, perivascular monocytes and microglia are activated, then pericytes and, possibly, endothelial cells and astrocytes. Glial cells and Th-1 express IFN- $\gamma$ , TNF, IL-1, 2, 6, 12. Proinflammatory cytokines attract other cells from the blood, in particular B-lymphocytes that produce antibodies to myelin, T(CD-8) killers and monocytes that “devour” myelin. In this way, perivascular foci of autoimmune demyelination are formed. In the process of damage to ODC and myelin, a large number of autoantigens are released, which give impetus to the further development of the autoimmune process - a phenomenon known as “epitope spreading”, which consists in the cascade release of new antigens and the appearance of changed antigens [20].

The heterogeneity of the demyelination process in MS is due to the predominance of certain immunopathological mechanisms in different patients. Based on extensive immunohistopathological studies of active foci of demyelination (based on stereotaxic biopsy and autopsy data), 4 different types of myelin destruction have been proposed: autoimmune demyelination caused by T-lymphocytes (macrophage-associated), autoimmune demyelination caused by B-lymphocytes (antibody-induced), distal oligodendropathy and their apoptosis, primary degeneration of ODCs [21].

Types 1 and 2 are more characteristic of relapsing MS, while types 3 and 4 are more common in progressive MS. If the patient has one of the types of demyelization, then the signs of the other are usually not found. Perivascular foci that form with the described pathological changes in MS are called plaques.

Impulse conduction is disturbed along the fibers in the foci of inflammation and demyelination, which leads to the emergence of clinical symptoms. With a long-term and pronounced process of demyelination, the death of axons occurs, which leads to the appearance of persistent symptoms [22].

Simultaneously with the demyelination process, there is remyelination, which is especially noticeable at the edges of the active plaque. But despite the appearance of the remyelination process already in the early stages of plaque formation, the recovery of the myelin sheath is not efficient enough. The longer the course of the disease, the less pronounced the process of remyelination, which may be associated with a significant decrease in the number of ODCs [23].

The main reasons for the death of an axon are an increase in the permeability of its membrane, a pathological intracellular biochemical cascade and a violation of axonal transport. It can be hypothesized that axonal loss is related to inflammation based on the fact that the foci of maximal axonal damage are close to sites of inflammatory infiltration. At this stage, ODCs and demyelinated axons are exposed to inflammatory mediators. They can damage axons directly or indirectly through certain receptors [24].

Receptor-dependent damage to ODCs is caused by cytokines from the TNF family,

which is secreted by activated Th1 cells. They act on the so-called “death receptors” located on the central nervous system in active foci. In addition, axons themselves can stimulate the expression of HCG II class molecules, which are recognized by T-lymphocytes. They attach to the demyelinated axon and secrete various proinflammatory cytokines, including perforin, which destroy the cell membrane of the axon. The active participation of T-lymphocytes in the development of axonal pathology is confirmed by the fact that the degree of axonal damage correlates with the number of immune cells in MS foci [25].

Receptor-independent damage of axons is caused by the action of nitric oxide, glutamate and proteases produced by microglia and macrophages. A demyelinated axon is more susceptible to inflammatory damage. Thus, if sodium ions normally enter the axon only in the areas of Ranvier junctions, then in a demyelinated axon it occurs along its entire length. Nitric oxide further enhances this process, and also suspends the synthesis of ATP in the mitochondria of axons. Demyelinated conductors can show spontaneous activity, ectopically generating multiple additional impulses. Such hyperexcitability due to chronic demyelination can facilitate the occurrence and development of neurodegenerative processes. In addition, demyelinated axons are deprived of trophic support from ODCs. During an inflammatory attack, activated immune cells release large amounts of glutamate. Glutamate-mediated excitotoxicity is an important component of both demyelination and axonal damage. Much attention is paid to nitrogen oxide, which is found in large quantities in the foci of inflammation. Oxidant damage to mitochondrial DNA leads to energy deficiency in neurons and glial cells with the development of their dystrophy. In the future, there is a violation of the function of ion channels with an increased influx of  $\text{Na}^+$  ions into the axon, damage to the  $\text{Na}^+ / \text{Ca}^{++}$  pump with excessive penetration of  $\text{Ca}^{++}$  into the axon. These phenomena lead to the activation of proteases (calpain, matrix metalloproteases), which cause the destruction of the axon cytoskeleton [26].

Several circumstances prevent axonal regeneration after damage has developed. These include a reduction in neurotrophic factors that support growth, the presence of glial scarring (a factor that depends on the site of the lesion), or the presence of inhibitory molecules that prevent axonal growth. Recent evidence suggests that axonal degeneration following injury has mechanisms similar to those responsible for programmed cell death (apoptosis).

Due to the fact that the main pathomorphological substrate of the disease is damage to myelin in the CNS, the symptoms of MS are, first of all, caused by damage to the leading pathways of the brain and spinal cord. The first symptoms may be damage to one or several conduction systems (mono- and polysymptomatic onset). According to the epidemiological study of large groups, the polysymptomatic variant of the clinical onset of MS still prevails [27].

All symptoms of MS are divided into classic and rare. The first group includes the most common symptoms, which are a direct manifestation of damage to the leading systems of the central nervous system. This also includes the symptom complexes characteristic of MS, which reflect the features of the clinical manifestations of the multifocal

demyelinating process. The second group includes rare clinical manifestations of the disease, which can cause difficulties in carrying out differential diagnosis.

The severity of clinical manifestations depends on the localization of the demyelinating process.

When the pyramidal pathways are damaged, 89% [28] have movement disorders in the form of a pyramidal syndrome with weakness and spasticity. Depending on the localization of the focus, paraparesis, hemiparesis, and less often monoparesis can be observed. As a rule, the lower limbs are involved more and earlier in the process. Hands suffer less often and are involved in the process at later stages of the disease. A decrease in strength is accompanied by the appearance of pathological reflexes, hyperreflexia of tendon and periosteal reflexes and a decrease, asymmetry or loss of skin abdominal reflexes. The last symptom is a subtle and early manifestation of the involvement of the pyramidal system in the pathological process, but it is not a specific symptom. The state of muscle tone can be diverse - from a spastic increase to hypo- or dystonia (with simultaneous damage to the conductors of the pyramidal and extrapyramidal pathways) [29].

Symptoms of damage to the cerebellum and its connections are manifested in 74% [29] of disease cases. Clinical manifestations are quite diverse: from episodic dizziness, unevenness of handwriting, imperceptible to the surrounding unsteadiness when walking to gross static and dynamic ataxia, dysmetria, failure to perform pointing tests, intentional tremor, chanted speech. In severe cases, tremors of the limbs and trunk appear even at rest, which makes self-care of the patient very difficult. Cerebellar symptoms are often accompanied by muscle hypotonia.

When the cranial nerves are damaged (58%) [30], the oculomotor, trigeminal, abductor and facial nerves – the nerves of the bulbar group – are more often affected [30]. Due to the involvement of both nuclear or supranuclear, and root levels, the central and peripheral impression of the corresponding nerves can be observed in the trunk of the GM. A frequent symptom in MS is nystagmus. When the facial nerve is damaged, facial muscle paresis develops, more often of the peripheral type. Damage to the trigeminal nerve is most often manifested by trigeminal pain [30].

A separate group consists of visual and oculomotor disorders (52%) [29]. Among the various visual disturbances in MS, the most common is a decrease in visual acuity due to the development of retrobulbar (optic) neuritis (RBN), which is characterized by a sharp, usually unilateral, decrease in visual acuity, lasting at least 24 hours, pain during eyeball movements, with full or partial restoration of visual function. On the fundus, pallor of the temporal halves of the optic nerve discs, later subatrophy of the optic nerve, discoloration of the temporal half of the disc without clinical neuritis (which is a subclinical manifestation of damage to the optic nerve) [31].

Vegetative disorders are manifested in the form of dysfunction of the pelvic organs. It is believed that dysfunction of the pelvic organs sooner or later occurs in 60% [31] of MS patients. The earliest signs are imperative urges to urinate, an increase in their frequency, urinary retention, which is associated with the inability of the bladder to

accumulate urine (detrusor hyperreflexia syndrome). Another pathogenetic direction of dysfunction of the pelvic organs is obstructive urination disorders in the form of a syndrome of incomplete emptying of the bladder due to dyssynergy of detrusor and sphincter contractions, which over time leads to the occurrence of inflammatory diseases of the lower and upper urinary tract. Charcot's triad is characteristic for the late stages of the disease: urinary incontinence, constipation, impotence. Disorders of the function of the pelvic organs affect all components of the quality of life. For people of working age, clinical manifestations of this type become an obstacle to the performance of professional duties, significantly limit the ability to move freely, disrupt sleep and personal relationships, which over time manifests as secondary depressive states unrelated to direct CNS damage [32].

Most often, the first clinical manifestations of MS are sensitivity disorders (77%). In the early stages, subjective sensitive disorders (paresthesias) and vague disorders of pain sensation appear: a feeling of "cotton legs", numbness of the cheek, fingers, a decrease in pain sensitivity with unclear boundaries, a mosaic character, or an objective decrease in vibration sensitivity from the lower legs to costal arches. Later, sensory disturbances of the conductive type (paroxysmal trigeminal neuralgia, chronic limb dysesthesia, musculoskeletal pain), disorders of muscle and joint sensitivity, resulting in proprioceptive ataxia and afferent paresis, are revealed. Pain syndrome occurs in 50-80% of patients, and often has a chronic nature [33].

Among the neuropsychological disorders (62%) [32], one should first of all highlight a decrease in intelligence, behavioral disorders, slowing down of cognitive and emotional functions, a decrease in short-term memory, depression, and a feeling of restlessness. Depression is associated with demyelination in the temporal lobes. MS is characterized by the syndrome of "constant fatigue" (60-80%), which is a consequence of the rapid exhaustion of mental processes and is manifested by the need for frequent rest, drowsiness, difficulty in performing repeated actions, which is a serious problem for many patients, as they cannot perform usual work for them even during the period of remission.

Rare clinical manifestations include symptoms of MS, occurring in no more than 10% of patients. A clear example is paroxysmal conditions, which are characterized by sudden onset, sudden cessation and frequent recurrence during the day (up to 200-300 times): tonic spasms of the limbs and face, which are quite painful, attacks of dysarthria and ataxia, Lhermite's symptom, epinaives (focal and generalized), which are associated with demyelination of the premotor zone of the cortex, etc. [34].

There are four types of disease development - remitting, relapsing-remitting, secondary progressive and primary progressive MS. In 80% of cases, the development of the disease begins with a relapsing-remitting course, which is characterized by alternating periods of exacerbation and recovery. The high frequency of exacerbations (42-57%) does not allow to completely restore the functions of neuroregulation, which leads to permanent disorders. Subsequently, within 6-10 years, 30-40% of MS patients go into a secondary-progressive course [34]. Much less often, in 20% of cases, MS



immediately takes a primary progressive form.

In addition, special forms of the course of MS are distinguished: benign MS, malignant course of MS (Marburg's disease), transient-progressive course, progressive-relapsing.

W.I. criteria are used to establish a diagnosis of MS. McDonald et al., which were last reviewed and published in 2010. - McDonald, 2010. It should be emphasized that these criteria should be applied only in cases where MS is the most accurate explanation of the clinical symptoms. The Expanded Disability Status Scale (EDSS) (Kurtzke J.F. 1983) is used for point assessment of disability.

In this article, we focused our attention on some issues that need to be resolved. For a correct understanding of the direction of development of pharmacotherapy of multiple sclerosis, it is necessary to focus on deepening knowledge about the subtleties of the mechanisms of multiple sclerosis, in this case, the ways of remyelination. In addition, we have marked, discussed and summarized the manifestations and most frequent complications of neurodegenerative diseases, namely, multiple sclerosis.

#### References:

1. Nefodov O.O., Belenichev I.F., Fedchenko M.P., Popazova O.O., Ryzhenko V.P., Morozova O.V. (2022) Evaluation of methods of modeling and formation of experimental allergic encephalomyelitis. *Research Results in Pharmacology* 8(2): 37–48. <https://doi.org/10.3897/rrpharmacology.8.77361>
2. Global, regional, and national burden of multiple sclerosis 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016 GBD 2016 Multiple Sclerosis Collaborators *Lancet Neurol.* 2019 Mar; 18(3): 269–285. doi: 10.1016/S1474-4422(18)30443-5
3. Outcome measures assisting treatment optimization in multiple sclerosis Gabriel Pardo, Samantha Coates, Darin T. Okuda *J. Neurol.* 2022; 269(3): 1282–1297. Published online 2021 Aug 2. doi: 10.1007/s00415-021-10674-8
4. A Targeted Literature Search and Phenomenological Review of Perspectives of People with Multiple Sclerosis and Healthcare Professionals of the Immunology of Disease-Modifying Therapies Jeri Burtchell, Daisy Clemmons, Joann Clemmons, Tim Sabutis, Adeline Rosenberg, Jennifer Graves, Michael L. Sweeney, John Kramer, Marina Ziehn, Brandon Brown, Jamie L. Weiss, Ahmed Z. Obeidat *Neurol Ther.* 2022 Sep; 11(3): 955–979. Published online 2022 May 24. doi: 10.1007/s40120-022-00349-5
5. Nefodov O.O., Kalbus O.I., Larionov V.B. (2022) Current Mechanisms and Strategies for Pharmacotherapy of Remyelination in Multiple Sclerosis. *Ukr. Med. Chasopys.* N3(149). pp. 1-4.
6. Multiple sclerosis in Ukraine: personalized treatment strategy. *Hejponews.* - 5 (116) 2020. pp. 54-57.
7. Thompson A.J., Banwell B.L., Barkhof F. et al. (2018) Diagnosis of multiple sclerosis: 2017 revisions of the McDonald criteria. *Lancet Neurol.*, 17(2): 162–173. doi: 10.1016/S1474-4422(17)30470-2.

8. An ImmunoChip study of multiple sclerosis risk in African Americans Noriko Isobe, Lohith Madireddy, Pouya Khankhanian, Takuya Matsushita, Stacy J. Caillier, Jay-aji M. Moré, Pierre-Antoine Gourraud, Jacob L. McCauley, Ashley H. Beecham, International Multiple Sclerosis Genetics Consortium, Laura Piccio, Joseph Herbert, Omar Khan, Jeffrey Cohen, Lael Stone, Adam Santaniello, Bruce A. C. Cree, Suna Onengut-Gumuscu, Stephen S. Rich, Stephen L. Hauser, Stephen Sawcer, Jorge R. Oksenberg *Brain*. 2015 Jun; 138(6): 1518–1530. Published online 2015 Mar 27. doi: 10.1093/brain/awv078

9. Immunotherapy for people with clinically isolated syndrome or relapsing-remitting multiple sclerosis: treatment response by demographic, clinical, and biomarker subgroups (PROMISE)—a systematic review protocol Thomas Lehnert, Christian Röver, Sascha Köpke, Jordi Rio, Declan Chard, Andrea V. Fittipaldo, Tim Friede, Christoph Heesen, Anne C. Rahn *Syst Rev*. 2022; 11: 134. Published online 2022 Jul 1. doi: 10.1186/s13643-022-01997-2

10. Leveraging real-world data to investigate multiple sclerosis disease behavior, prognosis, and treatment Jeffrey A. Cohen, Maria Trojano, Ellen M. Mowry, Bernard M.J. Uitdehaag, Stephen C. Reingold, Ruth Ann Marrie *Mult Scler*. 2020 Jan; 26(1): 23–37. Published online 2019 Nov 28. doi: 10.1177/1352458519892555

11. Quality of life in adults with multiple sclerosis: a systematic review Irene Gil-González, Agustín Martín-Rodríguez, Rupert Conrad, María Ángeles Pérez-San-Gregorio *BMJ Open*. 2020; 10(11): e041249. Published online 2020 Nov 30. doi: 10.1136/bmjopen-2020-041249

12. Wearable technologies to measure clinical outcomes in multiple sclerosis: A scoping review Sarah Alexander, Guy Peryer, Emma Gray, Frederik Barkhof, Jeremy Chataway *Mult Scler*. 2021 Oct; 27(11): 1643–1656. Published online 2020 Aug 4. doi: 10.1177/1352458520946005

13. Secondary Progressive Multiple Sclerosis: New Insights Bruce A.C. Cree, Douglas L. Arnold, Jeremy Chataway, Tanuja Chitnis, Robert J. Fox, Angela Pozo Ramajo, Niamh Murphy, Hans Lassmann *Neurology*. 2021 Aug 24; 97(8): 378–388. doi: 10.1212/WNL.0000000000012323

14. Activation of the CaMKII-Sarm1-ASK1-p38 MAP kinase pathway protects against axon degeneration caused by loss of mitochondria Chen Ding, Youjun Wu, Hadas Dabas, Marc Hammarlund *eLife*. 2022; 11: e73557. Published online 2022 Mar 14. doi: 10.7554/eLife.73557

15. Solving neurodegeneration: common mechanisms and strategies for new treatments Lauren K. Wareham, Shane A. Liddel, Sally Temple, Larry I. Benowitz, Adriana Di Polo, Cheryl Wellington, Jeffrey L. Goldberg, Zhigang He, Xin Duan, Guojun Bu, Albert A. Davis, Karthik Shekhar, Anna La Torre, David C. Chan, M. Valeria Canto-Soler, John G. Flanagan, Preeti Subramanian, Sharyn Rossi, Thomas Brunner, Diane E. Bovenkamp, David J. Calkins *Mol Neurodegener*. 2022; 17: 23. Published online 2022 Mar 21. doi: 10.1186/s13024-022-00524-0

16. Nefodov Oleksandr, Dychko Yevhen, Zhytnii Mykola, Chyrkin Victor (2021)

Experimental study of pharmacotherapy of neurological diseases for multiple sclerosis. *Modern Science - Moderní věda. - Praha. - Česká republika, Nemoros.* № 5. pp. 137-142.

17. KIF5A and the contribution of susceptibility genotypes as a predictive biomarker for multiple sclerosis Kelly Hares, K. Kemp, S. Loveless, C. M. Rice, N. Scolding, E. Tallantyre, N. Robertson, A. Wilkins *J. Neurol.* 2021; 268(6): 2175–2184. Published online 2021 Jan 23. doi: 10.1007/s00415-020-10373-w

18. Outcome Measures in Clinical Trials for Multiple Sclerosis Caspar E. P. van Munster, Bernard M. J. Uitdehaag *CNS Drugs.* 2017; 31(3): 217–236. Published online 2017 Feb 9. doi: 10.1007/s40263-017-0412-5

19. Clinical Evaluation of Siponimod for the Treatment of Secondary Progressive Multiple Sclerosis: Pathophysiology, Efficacy, Safety, Patient Acceptability and Adherence Sajida Sabsabi, Elio Mikhael, Georges Jalkh, Gabrielle Macaron, Mary Rensel Patient Prefer Adherence. 2022; 16: 1307–1319. Published online 2022 May 24. doi: 10.2147/PPA.S221882

20. Emerging Role of Follicular T Helper Cells in Multiple Sclerosis and Experimental Autoimmune Encephalomyelitis James L. Quinn, Robert C. Axtell *Int J Mol Sci.* 2018 Oct; 19(10): 3233. Published online 2018 Oct 19. doi: 10.3390/ijms19103233

21. The role of B cells in Multiple Sclerosis and related disorders Giancarlo Comi, Amit Bar-Or, Hans Lassmann, Antonio Uccelli, Hans-Peter Hartung, Xavier Montalban, Per Solberg Sørensen, Reinhard Hohlfeld, Stephen L. Hauser *Ann Neurol.* Author manuscript; available in PMC 2022 Jan 1. Published in final edited form as: *Ann Neurol.* 2021 Jan; 89(1): 13–23. Published online 2020 Nov 4. doi: 10.1002/ana.25927

22. Quantitative transportomics identifies Kif5a as a major regulator of neurodegeneration Sahil H Shah, Lucio M Schiapparelli, Yuanhui Ma, Satoshi Yokota, Melissa Atkins, Xin Xia, Evan G. Cameron, Thanh Huang, Sarah Saturday, Catalina B Sun, Cara Knasel, Seth Blackshaw, John R. Yates, Hollis T. Cline, Jeffrey L. Goldberg *eLife.* 2022; 11: e68148. Published online 2022 Mar 8. doi: 10.7554/eLife.68148

23. Nefodov O.O., Kalbus O.I., Larionov V.B. (2022) Modern mechanisms and strategies of pharmacotherapy of remyelination in multiple sclerosis. *Ukr. Med. Chasopys.* №3(149). pp. 1-4.

24. Extensive subpial cortical demyelination is specific to multiple sclerosis Andreas Junker, Jadwiga Wozniak, David Voigt, Uta Scheidt, Jack Antel, Christiane Wegner, Wolfgang Brück, Christine Stadelmann *Brain Pathol.* 2020 May; 30(3): 641–652. Published online 2020 Feb 3. doi: 10.1111/bpa.12813

25. Burlaka B.S., Belenichev I.F., Nosach S.G., Nefedov A.A. Morpho-functional parameters of neurons in the sensorimotor cortex and neuroapoptosis under conditions of an induced experimental allergic encephalomyelitis in rats and a course of intranasal gel administration containing N-phrnylacetyl-L-prolylglycine (noopept). *Journal of Education, Health and Sport.* Vol. 11(1). pp. 191-201.

26. Deciphering Multiple Sclerosis Progression Virginia Meca-Lallana, Leticia Berenguer-Ruiz, Joan Carreres-Polo, Sara Eichau-Madueño, Jaime Ferrer-Lozano, Lucía Forero, Yolanda Higuera, Nieves Téllez Lara, Angela Vidal-Jordana, Francisco

Carlos Pérez-Miralles *Front Neurol.* 2021; 12: 608491. Published online 2021 Apr 7. doi: 10.3389/fneur.2021.608491

27. Prevalence of Seizure/Epilepsy in Patients with Multiple Sclerosis: A Systematic Review and Meta-Analysis Omid Mirmosayyeb, Vahid Shaygannejad, Nasim Nehzat, Aida Mohammadi, Mahsa Ghajarzadeh *Int J. Prev Med.* 2021; 12: 14. Published online 2021 Feb 24. doi: 10.4103/ijpvm.IJPVM\_75\_20

28. Clinical Course of Multiple Sclerosis Sylvia Klineova, Fred D. Lublin *Cold Spring Harb Perspect Med.* 2018 Sep; 8(9): a028928. doi: 10.1101/cshperspect.a028928

29. In vivo characterization of cortical and white matter neuroaxonal pathology in early multiple sclerosis Tobias Granberg, Qiuyun Fan, Constantina Andrada Treaba, Russell Ouellette, Elena Herranz, Gabriel Mangeat, Céline Louapre, Julien Cohen-Adad, Eric C Klawiter, Jacob A Sloane, Caterina Mainero *Brain.* 2017 Nov; 140(11): 2912–2926. Published online 2017 Oct 10. doi: 10.1093/brain/awx247

30. Clinical and Paraclinical Biomarkers and the Hitches to Assess Conversion to Secondary Progressive Multiple Sclerosis: A Systematic Review Nik Krajnc, Gabriel Bsteh, Thomas Berger *Front Neurol.* 2021; 12: 666868. Published online 2021 Aug 26. doi: 10.3389/fneur.2021.666868

31. Home-based Pilates for symptoms of anxiety, depression and fatigue among persons with multiple sclerosis: An 8-week randomized controlled trial Karl M. Fleming, Susan B Coote, Matthew P Herring *Mult Scler.* 2021 Dec; 27(14): 2267–2279. Published online 2021 Apr 19. doi: 10.1177/13524585211009216

32. Nefodov O. O., Myasoyed YU. P., Solomenko M. V., Velykorodna-Tanasiychuk O. V., Baklunov V. V., Adehova L. YA., Chyrkin V. I., Malchuhin R. K. Study of correction of somatic pain under the conditions of experimental pathology of multiple sclerosis. *Ukrayins'kyi zhurnal medytsyny, biolohiyi ta sportu.* №6(6). pp. 66-73.

33. Progressive multiple sclerosis Daniel Ontaneda, Robert J. Fox *Curr Opin Neurol.* Author manuscript; available in PMC 2016 Jun 1. Published in final edited form as: *Curr Opin Neurol.* 2015 Jun; 28(3): 237–243. doi: 10.1097/WCO.000000000000195

## GRAPHICAL MODELING OF LOWER JAW SIZE RATIOS FOR TECHNOLOGICAL IMPROVEMENT OF MANDIBULAR ANESTHESIA

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**Annotation.** *Clinical experience shows that even small violations in the technique of performing mandibular anesthesia have a negative impact on its effectiveness. There are also a number of factors that do not depend on the skills of the doctor, but make it extremely difficult to perform it. The aim of the work was to increase the effectiveness and safety of conduction anesthesia on the lower jaw by developing a universal auxiliary tool. In the anatomical part, the anthropometric indicators of 91 dry anatomical preparations of the lower jaw of adults were studied. The X-ray part of the study was carried out using a computer tomograph Sirona ORTHOPHOS SL. The corresponding anthropometric indicators were studied on 420 tomograms and orthopantomograms of the lower jaw of adults.*

**Keywords:** *orthopantomogram, developmental anomalies, lower jaw.*

Currently, conduction anesthesia is the most common method of local anesthesia for the main types of dental treatment in the lower jaw. The term “mandibular anesthesia” refers to various techniques for performing conduction anesthesia near the mandibular foramen, the purpose of which is the reversible interruption of nerve conduction in the corresponding areas of the target nerves (inferior alveolar, lingual, buccal). Most of the techniques require the determination of about 10 anatomical and topographic landmarks, which makes them difficult.

Clinical experience shows that even small violations in the execution of the technique have a negative impact on its effectiveness. There are also a number of factors that do not depend on the skills of the doctor, however, it is extremely difficult to perform mandibular anesthesia. These include individual anatomical, physiological and behavioral characteristics of the patient. All this causes its insufficient efficiency, which, according to a number of authors, ranges from 60 to 85 %. The solution to the problem can be the development of a universal auxiliary tool to improve clinical orientation and reduce the influence of local adverse factors based on the study of the anthropometric parameters of the lower jaw and graphical modeling of the ratio of its main dimensions.

**Aim of the study.** To increase the effectiveness and safety of conduction anesthesia in the lower jaw by developing a universal auxiliary tool - provider based on the study of the necessary anthropometric parameters of the lower jaw and graphical visualization of the direction of the needle vector using the Back Low method [1-5].

**Materials and methods.** The anatomical part of the study was carried out on the basis of the Department of Normal and Pathological Human Anatomy of the Odessa National Medical University. Anthropometric parameters of 91 dry anatomical preparations of the lower jaw of adults were studied.

The X-ray part of the study was carried out on the basis of the SE “ISMFS NAMS” of Ukraine using a Sirona ORTHOPHOS SL computer tomograph. The corresponding anthropometric parameters were studied on 420 tomograms and orthopantomograms of the lower jaw of adults.

To study the ratio of jaw sizes and the presence of relationships between them, a correlation analysis was carried out using the linear Pearson correlation coefficient, which is used to study the relationship between two variables measured in metric scales on the same sample. To assess the correlation coefficient, the Chaddock scale was used.

The “KOMPAS-Graph v21” program was used to visualize the obtained data and calculate accompanying values. The calculated model was based on the previously obtained average values of the correlating parameters.

**Results and discussion.** To study anthropometric indicators, a number of parameters were determined, which are the main landmarks for anesthesia using the Back Low method. First of all, it was noted that the horizontal plane passing through the teeth of the lower jaw, in the absolute majority of cases, crosses the funnel of the mandibular canal - the area where the lower alveolar nerve enters the body of the lower jaw. This ratio is maintained with partial or complete adentia, as well as atrophy of the lower jaw. Exceptions may be pathologies and anomalies in the development of the lower jaw, fractures, severe cases of involutive atrophy. This relationship is well observed on orthopantomograms and can be measured. In cases where the horizontal plane passing along the upper anatomical point of the alveolar part or teeth crossed the funnel region of the mandibular canal, the value was considered as 0. If this area was higher, the number of millimeters with a “+” sign was taken into account, if it was lower – with a “-” sign. So, when studying 420 orthopantomograms, the average value was +0.14 mm.

In turn, the measurement of the dimensions of the funnel region of the mandibular canal showed that its average height is 10.8 mm, and the length is 8.5 mm. Thus, the funnel region of the mandibular canal is a distally inclined ellipse, expanding in the upper part, at the base of which there is a mandibular opening displaced anteriorly to the border of the first and second third of the length of the funnel region, partially covered by a bone protrusion or a thin plate (uvula). When studying dry anatomical preparations of the human lower jaw, it was noted that this uvula is more common and better expressed at a young age. The bony uvula was weakly expressed or absent on the preparations, where there were signs of involutive atrophy and loss of teeth. During the measurements, it was noted that the dimensions of the funnel region of the mandibular canal do not depend on

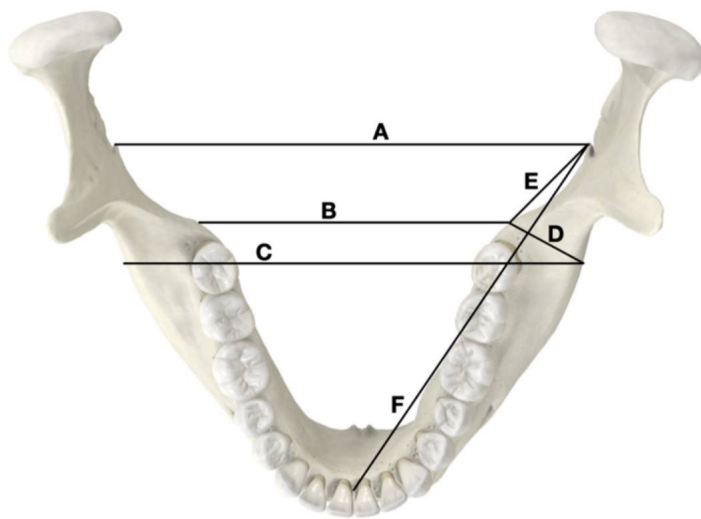
the degree of atrophy of the lower jaw and, on average, remain the same as at a young age, but their boundaries are less pronounced.

It was also noted that the point located at the top of the internal oblique line at the point of its transition from the alveolar part to the inner surface of the mandibular branch (point BL) is in the horizontal plane at the level of the lower border (or slightly below) of the funnel region of the mandibular canal. So the average value here was – 0.29 mm.

This point is an important landmark for conducting anesthesia using the Back Low method in clinical practice, as it is covered with a layer of attached gums and is located at the site of its transition to the soft tissues of the peripharyngeal region, which makes it easy to visually or palpate this landmark. Also clinically important, for identifying possible relationships, is a number of anthropometric measurements:

- A – distance between mandibular foramen;
- B – distance between internal oblique lines;
- C – distance between outer oblique lines;
- D – distance from internal oblique line to external oblique line;
- E – distance from the internal oblique line to the mandibular foramen;
- F – distance from the extreme anterior point of the funnel region of the mandibular canal to the alveolar septum of 31-41 teeth or the mental symphysis in case of adentia.

The measurements were carried out in the horizontal plane corresponding to the level of the BL point (Fig. 1).



**Fig. 1. Image of the studied anthropometric values on the lower jaw.**

- A – distance between mandibular foramen;
- B – distance between internal oblique lines;
- C – distance between outer oblique lines;
- D – distance from internal oblique line to external oblique line;

E – distance from the internal oblique line to the mandibular foramen;

F – distance from the extreme anterior point of the funnel region of the mandibular canal to the alveolar septum of 31-41 teeth or the mental symphysis in case of adentia.

To calibrate the measurements of 10 dry preparations, tomography was performed and the measurement results were compared using a physical measuring device (caliper) and virtual meters in the tomography viewer. The results obtained from the measurement of dry preparations and tomograms were combined, and their average values are presented in Table 1.

*Table 1*

**Mean measurements on the lower jaw**

Line measurement	A	B	C	D	E	F
Average value, mm	83.72	62.24	79.50	10.65	13.90	72.04
Standard deviation, mm	4.29	3.82	4.54	1.62	2.32	4.98

The main objective of this study was to establish not only the average values of a number of parameters in the lower jaw, but also to evaluate their possible relationship. The results of a linear correlation analysis of a number of anthropometric values in the lower jaw are presented in Table 2.

*Table 2*

**The results of a linear correlation analysis of a number of anthropometric values in the lower jaw (r-Pearson)**

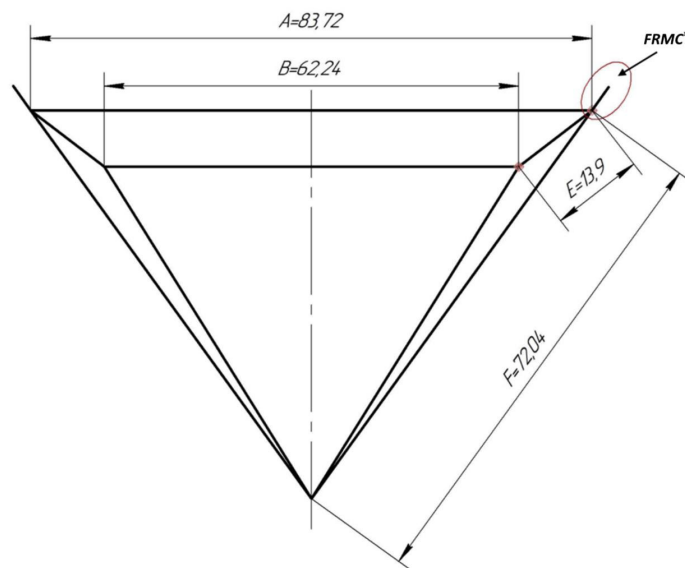
Measurement line	A	B	C	D	E	F
A	-	0.63	0.78	-0.11	0.58	0.80
B		-	0.68	-0.41	0.21	0.59
C			-	0.12	0.34	0.55
D				-	0.01	0.06
E					-	0.78
F						-

It follows from the obtained data that the correlation dependence between the obtained values is rather non-uniform. Thus, a high relationship is determined between lines A and F (0.80), A and C (0.78), E and F (0.78). The average relationship is determined between the values of A and B (0.63), A and E (0.58), B and C (0.68), B and F (0.59), C and F (0.55). A weak relationship was found between C and E values (0.34). Correlation analysis of the values B and E (0.21), C and D (0.12), E and D (0.01), D and F (0.06) showed a very weak relationship. Values A and D (-0.11), B and D (-0.41) showed a very weak and weak inverse relationship, respectively. To solve the problem of



improving the safety and efficiency of conduction anesthesia in the lower jaw by improving the accuracy of injection by developing an additional device, one should rely on values with a high relationship or close to it. It is also necessary to take into account the influence of intraoral factors.

Next, a graphical visualization of the obtained data was carried out, in which the previously obtained average values of the correlated parameters of the lower jaw were taken as the basis for the calculation model (Fig. 2).



**Fig. 2. Graphical visualization of the values and ratios of the studied quantities in the lower jaw**

\*FRMC – funnel region of mandibular canal

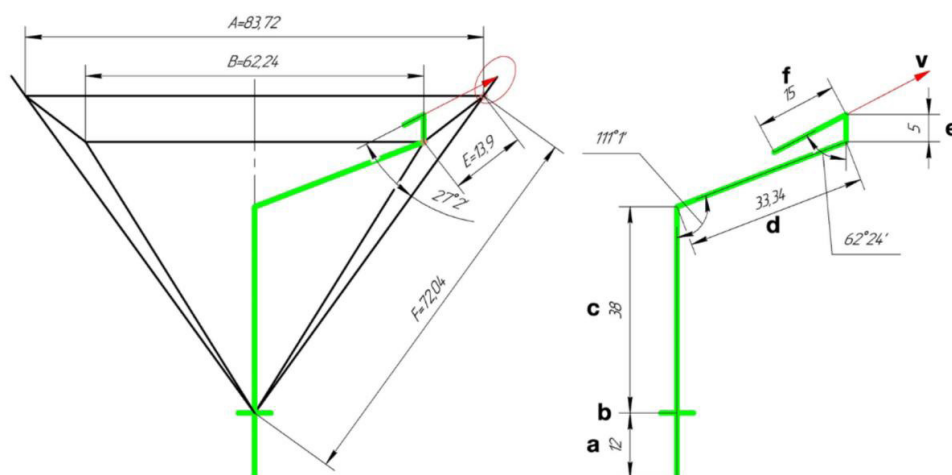
When analyzing this graphical visualization, it seems possible to determine a number of additional parameters. In particular, the average value of the EAF angle, the apex of which is the mandibular foramen, was 12.34 degrees. It should be noted that the value of this angle in the analysis of all jaws ranged from 2 to 51.4 degrees and did not correlate with any of the measured values. This indicates that the direction of the needle stroke along the average value, which is the basis of various modifications of mandibular anesthesia, does not at all guarantee the accuracy of the injection and, as a result, its effectiveness and safety. The size of the funnel region of the mandibular canal allows for a certain error during anesthesia, however, graphic modeling with an “average” angle showed that the needle reached the funnel region only in half of the cases. In other cases, the contact of the conditional needle occurred anterior to the target or the needle passed tangentially posteriorly without contact with the bone.

The distance from the mandibular foramen to the BL point (line E) is a much more stable parameter. Graphical modeling has shown that an increase in the angle of attack

and a shift in the direction vector posteriorly along the line E can significantly increase the accuracy. So, with an increase in the angle of attack to 27.2 degrees and a displacement of the needle movement vector posteriorly by 5 mm, the funnel region is crossed in 84 % of cases. The remaining 16 % of cases were in the jaws, where the length of the E line was greater than 16 mm. In these cases, the motion vector passed anterior to the funnel zone. Subsequent modeling with a further increase in the angle of attack and a displacement of the needle motion vector posteriorly showed a decrease in the percentage of hits, due to the passage of the needle posteriorly from the funnel zone. It should also be noted that such distalization of the injection vector and an increase in the angle of attack can cause difficulties in clinical practice, which will be associated with a gag reflex and insufficient mouth opening.

Thus, we considered the achieved parameters to be optimal in order to base the design of the auxiliary device. Its task is to serve as a directing (provider) for the needle when performing mandibular anesthesia using the Back Low technique, and also to hold the patient's tongue.

Based on the data obtained above and clinical experience, we have developed a model shown in figure 3.

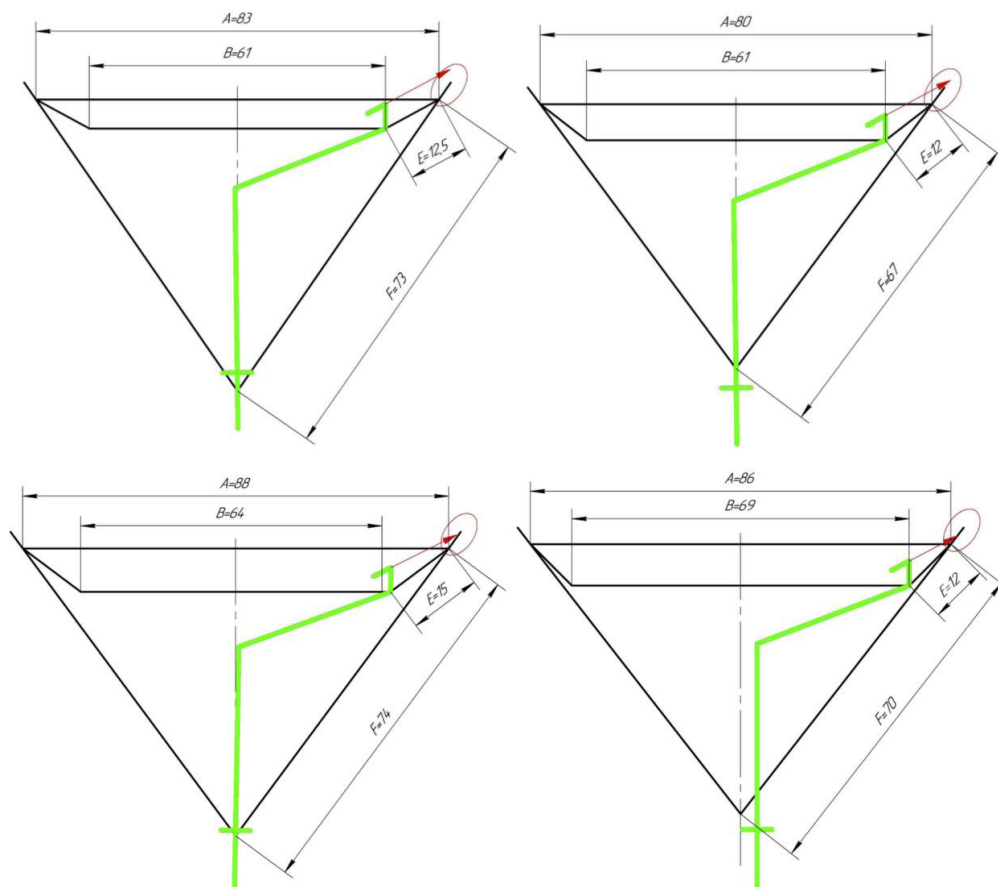


**Fig. 3. Graphic visualization of provider parameters, mm**

a – holder; b – incisal mark; c,d – tongue holder; e – directing pilot; f - directing funnel; v – needle direction vector.

It is assumed that this provider will have two points of support in the oral cavity – the point of contact of parts d and e (which corresponds to the point BL) and the point between teeth 31 and 41 or on the midline in case of their absence (incisal mark). Based on the calculations, this should ensure that the needle contacts the infundibulum in 84 % of cases (Fig. 4). It should be noted that the position of the provider should always be parallel to the midline, also the incisal mark not matching the center line may indicate a

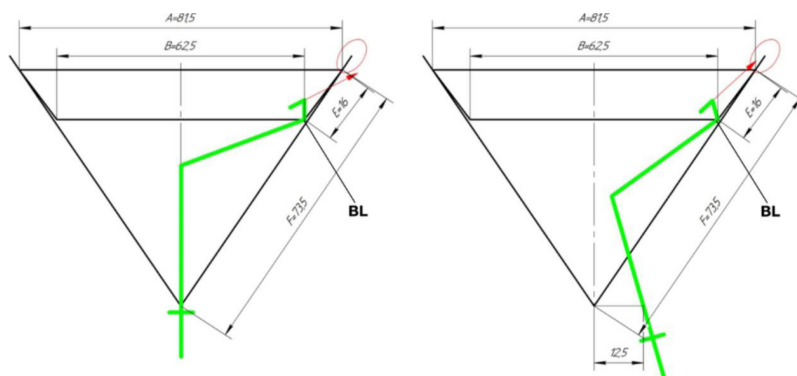
deviation of the needle vector from the target. In the remaining cases, the needle will contact the bone anterior to the target, which will be clinically manifested by a small advance of the needle in the soft tissues to contact with the bone (less than 13 mm) or a further absence of pulpal anesthesia in the presence of numbness of the tongue (Fig. 4). To solve this problem, it was possible to change the angle of attack by turning the provider in the direction of anesthesia. With this shift, the BL point is the axis of rotation, and the handle of the provider is shifted from the center line towards anesthesia.



**Fig. 4. Graphical visualization of the direction of the needle vector in the standard position of the provider and various parameters of the lower jaw.**

Graphical modeling showed that with such a displacement of 12.5 mm, the motion vector of the needle falls within the boundaries of the funnel area in all cases considered (Fig. 5).

It should be noted that these calculations are theoretical and do not take into account some clinical features, such as gingival thickness at the BL point, which can be 1-3 mm, or an error in the placement of the provider. However, in these calculations, we determined



**Fig. 5. Graphical simulation of the change in the angle of attack when the provider is rotated towards anesthesia.**

the standard deviations (table 1), the values of which are comparable with the magnitude of the influence of these negative factors.

The next stage in the development of the provider was the creation of a 3D model based on the obtained above parameters.

**Conclusions.** The established ratios of the dimensions of the lower jaw with a high correlation were the basis for further graphic modeling, on the basis of which additional geometric parameters were determined, which made it possible to significantly increase the accuracy of the angle of attack of the injection needle. This was the basis for the development and creation of a 3D model of the “Back Low provider” auxiliary device, which provides tongue fixation, distalization of the needle injection point and optimization of the angle of attack during conduction anesthesia in the lower jaw.

#### References:

1. Wozniak J., Kedzia A., Dudek K. (2010) Mathematical assessment of foetal facial skeleton development. *Arch. Perinat. Med.* 2010;16(4):211-217
2. Yadigar Kastamoni, Ahmet Dursun, Onur Can Sanli, Neslihan Yuzbasioglu, Soner Albay (2020). Morphometric Development of the Mandible in Fetal Cadavers. *J Craniofac Surg.* Oct;31(7):2036-2039. doi: 10.1097/SCS.00000000000006670.
3. Nemeč Ursula, Stefan F. Nemeč, Peter C. Brugger, Michael Weber, Bernhard Bartsch, Dieter Bettelheim, Michael Gruber, Daniela Prayer (2015). Normal mandibular growth and diagnosis of micrognathia at prenatal MRI. *PrenatDiagn.* 35(2):108-116 doi: 10.1002/pd.4496. Epub 2014 Oct 7.
4. Bishara S.E., Treder J.E., Jakobsen J.R. (1994) Facial and dental changes in adulthood. *Am J Orthod Dentofacial Orthop.* Aug;106(2):175-86 doi: 10.1016/S0889-5406(94)70036-2.
5. Freitas V., Madeira M.C., Toledo Filho J.L, Chagas C F. (1979). Absence of the mental foramen in dry human mandibles. *Acta Anat (Basel).* 104(3):353-5. doi: 10.1159/000145083.

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