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## АННОТАЦИИ

### Abstracts

#### **Impact of Input Data Size on Predictive Analysis**

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*Key words and phrases:* big data; data size; data quality; predictive analysis; logistic regression.

*Abstract:* The purpose of the article is to assess the influence of the source data size on the quality of predictive classification models. To do this, we examined and analyzed existing approaches to assess the impact of the size of the source data on the accuracy and predictive power of forecast models using logistic regression and identified their shortcomings, which include an incomplete analysis of the size of the source data on the forecast result, which ultimately leads to loss of predictive accuracy of the model and its validity. The proposed approach allowed us to more accurately take into account the size of the source data, which ensures the necessary accuracy of the forecast model and the necessary validity of the model. The article proposes a methodology for estimating the optimal size of input data and its impact on the accuracy of predictive classification models using logistic regressions.

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#### **Statement of the Problem of Optimizing the Structure of Multiprocessor Computing Systems**

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*Key words and phrases:* hardware-software complex; model; performance; queuing theory.

*Abstract:* Since at present digitalization makes it impossible for organizations to operate in all areas of life without high-quality software, it is very important to formulate the problem of optimizing the structure of multiprocessor computing systems. The research objectives are to study the parameters of this problem, which have a great influence on the choice of optimization methods; to analyze the hardware and software complex, which consists of N types of processors. The research hypothesis is based on the assumption that the productivity model under consideration also includes additional states in which some processors and the buses connecting them are faulty, transitions between states corresponding to failures of buses and processors, as well as restoration of their functionality. The method of creating a productivity model of the agricultural complex as a queuing system enables to find structures that have hardware redundancy (compared to the minimum configuration), but, due to this, they have a high probability of being in states that provide the performance necessary to achieve the goals of the functioning of the designed system. The study resulted in the construction of the models that allow formalizing the problem of selecting optimal architecture options for multiprocessor hardware and software complexes of real-time control systems.

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## Selectiing Equipment Parameters for Physical Modeling of a Virtual Inertia System

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*Key words and phrases:* power electronics; converter; inverter; virtual inertia system.

*Abstract:* Renewable energy sources, such as wind and solar power plants, are rapidly replacing traditional sources of electricity, such as oil, natural gas or coal. Most renewable energy sources are connected to the grid using power electronics devices – inverters. As a result, power plants based on renewable energy sources do not provide an inertial response to disturbances in the external network. This reduces the overall inertia of the power system and makes emergency modes more difficult. One solution to this problem is the use of a virtual inertia system. At the moment, there are research groups and laboratories dealing with this topic. The purpose of this article is to analyze and determine the composition of laboratory equipment for physical modeling of the operation of virtual inertia systems developed by our research group.

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## Visualization of the Monitoring and Control System with Functions for Simulating Signals from the Dosing Unit of the Biological Treatment Unit

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*Key words and phrases:* biological treatment; visualization; dosing; mnemonic diagram; monitoring and control system; development environment; CoDeSys v3.5; FBD.

*Abstract:* The purpose of the paper is to study the functions of simulating signals in the mnemonic diagrams of control systems for dosing installations. Mimics, as graphical representations of a system, provide operators with a simple and intuitive interface for monitoring and controlling dosing processes, and signal simulation functions are key. The task of the research is the technical implementation of mnemonic diagrams with a function for simulating signals using the CoDeSys v3.5 development environment. Ultimately, it is emphasized that mimics with signal simulation capabilities contribute to more reliable and efficient operation of dispensing systems by providing operators with tools for monitoring, training and diagnostics of processes.

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## A Modified Numerical Algorithm for Finding a Solution to the Problem of Segmenting Labor Market Indicators

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*Key words and phrases:* balance mathematical model; labor force dynamics; labor market; numerical algorithm.

*Abstract:* The development of an approach to finding a solution to the problem of segmenting labor market indicators is aimed at increasing the quality of analysis and forecasting the dynamics of the industry market. The article discusses a modified algorithm for solving this problem, based on a mathematical model of intersectoral mobility of labor resources: it is assumed that taking into account the features of the region of feasible solutions specified by the inequalities of the mathematical model will allow achieving greater speed of calculations. The algorithm was constructed based on gradient optimization methods. It is shown that the computational complexity of the developed algorithm is lower than that of gradient descent algorithms with adaptive step selection.

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## Decentralized Forecasting of Borrowers' Creditworthiness

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*Key words and phrases:* blockchain; deep learning; decentralization; borrower; creditworthiness; machine learning; forecasting.

*Annotation:* This paper conducts a study of the methods and capabilities of machine learning, deep neural networks and blockchain technology in order to substantiate and present a conceptual model of a decentralized system for predicting the creditworthiness of borrowers. The objectives of the study are to analyze international research experience in the implementation of machine learning and deep neural networks in lending, as well as the implementation of blockchain in the financial sector, to identify its advantages and disadvantages. The research methods are analysis, synthesis, generalization, comparison, modeling and systematization. The result of the study is the presentation of a conceptual model of a decentralized borrower credit forecasting system that provides the potential to improve the credit forecasting process, ensure data security and increase transparency in the financial sector.

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## Electromagnetic Resonance and Induced Effects in Disperse Systems

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*Key words and phrases:* electromagnetic resonance; disperse systems; nonlinear electrodynamic equations; heat and mass transfer; bispherical coordinate system.

*Abstract:* The purpose of this paper is to determine the conditions for the occurrence of electromagnetic resonance in an optically nonlinear two-layer spherical particle and in arbitrarily distributed pairs of dispersed particles, as well as to study the induced effects caused by resonance. To achieve the goal, the following tasks were set and completed: determination of the conditions for the occurrence of electromagnetic resonance and their analysis in a two-layer spherical particle with quadratic optical nonlinearity; determination of the conditions for the occurrence of electromagnetic resonance and their analysis in interacting pairs of dispersed particles; consideration of induced effects, such as nonlinear heat and mass transfer and the propagation of electromagnetic resonance through a system of dispersed particles.

To solve these problems, methods of mathematical physics, electrodynamics, and thermophysics were used. Hypotheses were considered about the difference between the conditions of electromagnetic resonance in optically nonlinear spheres and pairs of spheres from those for a single sphere with linear properties, about the significant influence of resonance conditions on the processes of heat and mass transfer in the above systems with nonlinear properties.

The study showed that the condition for the occurrence of resonance in an optically nonlinear two-layer medium, obtained near exact solutions, differs from the conditions for resonance in a system with linear properties. There is a mutual influence of a pair of closely spaced dispersed particles on the resonance condition, which is due to the determination of absorption and scattering coefficients from an infinite system of linear algebraic equations. There is a significant influence of thermal conductivity coefficients on the temperature in the systems under consideration (tendency to infinity or limitation), which is associated with the type of their dependence on temperature. The mass transfer process of the "reaction-diffusion" type near the resonance condition occurs in a mode where the reaction rate is practically independent of temperature. The effect of electromagnetic resonance propagation through a group of dispersed particles may occur and, as a consequence, the formation of a group of particles with changed characteristics.

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## **Review of Experimental Methods for Studying the Thermal Parameters of Building Envelopes**

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*Key words and phrases:* heat transfer resistance; building envelope; thermal uniformity; thermal characteristics; thermal protection.

*Abstract:* This article discusses a method for determining the heat transfer resistance of enclosing structures, a method for increasing the thermal uniformity of enclosing structures, a device for determining the reduced heat transfer resistance of enclosing structures. The purpose of the study was to conduct a literature review of modern methods for studying the thermal characteristics of enclosing structures. A review of research aimed at improving existing methods for obtaining thermal parameters is provided. Based on the available data, the possibility of using the developed installations was considered.

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## **Overview of Devices for Measuring Heat Flow and Temperature through Building Envelopes**

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*Key words and phrases:* heat transfer resistance; building envelope; thermal uniformity; thermal characteristics; thermal protection.

*Abstract:* This article discusses the laboratory determination of the thermal characteristics of building materials, as well as the determination of heat transfer resistance in a climate chamber and in natural conditions. The purpose of the research is to conduct a literature review of modern methods for studying the thermal characteristics of enclosing structures. The research aimed at improving known methods for calculating thermal parameters is presented in detail. According to the studied data, the prospects for using various experimental equipment are analyzed.

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## **A Method for Ensuring the Sustainability of Engineering and Technical Preparation for the Construction of an Industrial Facility Using a Probabilistic Model**

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*Key words and phrases:* construction conditions; random factors; construction risks; engineering and technical training; organizational and technological solutions; probabilistic format; topology model.

*Abstract:* The stage (period) of engineering and technical preparation is the key to ensuring conditions for the production of sustainable and reliable main and final stages of construction of an industrial facility. The purpose of the research is to analyze the directions of development and improvement of methods for developing organizational and technological solutions for engineering and technical preparation of the construction of an industrial facility. The research hypothesis includes an assumption about the feasibility of developing and applying a probabilistic format when developing an organizational and technological model of construction production. The research methods include techniques for systems engineering analysis of complex events, processes and phenomena, as well

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as mathematical (analytical) modeling of organizational and technological processes. As a result of the research, an analysis algorithm and an example of taking into account the consequences of manifestations of a random factor on the established terms of construction production in relation to the engineering and technical preparation of the construction of an industrial facility are presented.

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### **The Practice of Standard Construction in Modern Saransk**

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*Key words and phrases:* standardization; typification in architecture; standard section.

*Abstract:* The purpose of the article is to trace the stages of development of standard construction in Saransk, to determine the factors that influenced its development and the spread of various types of residential buildings depending on social, economic, regional, communication and architectural and artistic factors. As part of this goal, the tasks were set to identify the features of the regulatory framework in the development of standard residential buildings, generalize the experience of designing facilities of key specialized enterprises in Saransk over the past few decades. As a result of historical research, the article developed recommendations for improving the appearance of the city using standard housing construction technology and criteria for interaction with urban communities for a greater social effect of introducing standard construction into the general plan of Saransk on the scale of the city's urban planning structure to create a comfortable urban environment.

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### **On the Possibility of Further Operation of Reinforced Concrete Structures after Exposure to Fire**

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*Key words and phrases:* source of ignition; concrete cutting; fire load; load-bearing capacity assessment.

*Abstract:* Recently, fires at construction sites have become a common phenomenon, as a result of which it is necessary to conduct an inspection of structures. The purpose of this article is to determine the progress of engineering and technical survey work, thereby speeding up the work by working according to a specific algorithm. The main objective of this study is to develop a unified algorithm for conducting the inspection of reinforced concrete structures damaged by fire. To do this, using the example of an object damaged by fire, visual and instrumental examinations were carried out, and by analyzing regulatory literature, the procedure for action and the formation of a conclusion about the condition of reinforced concrete structures was determined.

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### **Typology of Modern Digital Learning Platforms for Preparing for the Unified State Exam**

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*Moscow State Pedagogical University, Moscow*

*Key words and phrases:* electronic educational resources; online platforms; online courses; classification of online platforms; digital learning platforms; commercial digital platforms; methods of preparation for the Unified State Exam.

*Abstract:* The purpose of the study is to study modern digital learning platforms that are focused

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on preparing for the unified state exam in order to formulate a current typology of such resources. During the study, it was determined that modern domestic commercial digital learning platforms and applications are highly competitive compared to well-known analogues integrated into the educational system in the context of the digital transformation of education, and in addition, can be classified according to a number of criteria that should be taken into account for study new platforms in terms of their effectiveness.

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**“Youth for Science – 14”:  
Medical-Biological and Psychological-Pedagogical Aspects of Physical Culture and Sports**

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*Key words and phrases:* conference “Youth for Science-14”; health-improving physical culture; psychological and pedagogical techniques for activating students.

*Abstract:* The purpose of the study is to summarize the modern experience of health-improving physical culture, sports and psychological and pedagogical techniques presented at the All-Russian Conference “Youth for Science – 14”. As well as psychological and pedagogical approaches to optimizing the training of students. The main task is to identify innovations of young scientists. The hypothesis is based on the assumption that dissemination of innovations will contribute to increasing the efficiency of adapted physical education, physical education and sports. The research methods include the presentations and publications of the scientific conference were systematized; the analysis of answers to questions and discussions held at Sochi State University was carried out. The findings are as follows: psychological and physical consequences of stopping sports; self-control diary in physical education and sports; activation of research work of students; the influence of physical culture on cardiovascular system; adapted physical education and sports for those with health problems; mini football; the formation of posture; the development of coordination abilities.

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**Model of Team Formation in an Educational Organization**

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*Key words and phrases:* team; team building; team building model; pedagogical team; team of an educational organization.

*Abstract:* The article is devoted to the consideration of the process of team building in an educational organization. The purpose of the work is to compile a model of team building in an educational organization. A hypothesis was put forward according to which it is assumed that motivational, behavioral and emotional can be considered as the main criteria for team building in educational institutions. The authors analyzed the literature and proposed their own model of team formation in an educational organization, which includes orientational, methodological, content, technological and effective blocks. The methods used were theoretical analysis of sources, generalization, and modeling.

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**Motives for Choosing the Elective Course “Sports and Health Tourism”  
by Petrozavodsk State University Students**

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*Key words and phrases:* sports and health tourism; students; elective course; safety.

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*Abstract:* The article is devoted to determining the motives of students of Petrozavodsk State University when choosing the elective course “Sports and Health Tourism” in the discipline “Physical Culture and Sports”. The analysis of a survey among students is presented. The article also discusses the importance of tourism, both for individuals and for society. The main research methods are theoretical analysis and synthesis of scientific and methodological literature, questioning. The results of the study enable to conclude that students, when choosing an elective course in physical education, give preference to a convenient class schedule and the location of the gym. At the same time, young people want to learn how to behave and survive in the wild, and also want to be strong and healthy. The survey data helps to understand the true motives of students when choosing an elective course, and on this basis, adjustments will be made to the physical education work program.

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### **Analysis and Characteristics of the Initial Standards of GTO Standards in Karelia in the 1930s**

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*Key words and phrases:* All-Union physical training complex “Ready for Labor and Defense”; GTO; standards; 30s; tests.

*Abstract:* In the Karelian Autonomous Soviet Socialist Republic (**KASSR**), which in the pre-war years existed from December 5, 1936 to March 31, 1940, in 1938 the first standards of the All-Union Physical Culture Complex “Ready for Labor and Defense” (**GTO**) were published) 1st degree. The purpose of the article is to analyze paper work is to study the characteristics and types of sports of the original complex of the thirties of the last century in the Republic of Karelia, to analyze the quality and quantity of standards included in the GTO, and further compare with the modern organization of similar activities. The main research methods are theoretical analysis and synthesis of scientific and methodological literature, research of archival materials. The results of the study, based on the results of studying archival data, allow us to draw the appropriate conclusions that the GTO standards in Karelia in the 30s. very diverse, compiled professionally and with high quality.

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### **History of the Development of Opera Performance**

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*Key words and phrases:* opera performance; history of vocal art; opera singing; traditions of opera art.

*Abstract:* The purpose of this article is to consider the formation and development of opera performance in the context of musical development. The research hypothesis is as follows: the article examines the historical stages of the development and formation of operatic performance, however, the development of operatic art will be more complete if it is considered from the historical perspective of the development of musical art as a whole and presents the features of operatic art characteristic of each era, musical style and direction. Methods used in the research on this issue, the results of which are presented in the article: analysis of scientific and scientific-methodological literature, comparison of the historical and musical development of opera and vocal art, as well as generalization and integration of materials on the musical and stylistic development of vocal performance. As a result of the study, a historical analysis of the development of opera was presented; the features of opera performance in different eras are considered; the traditions of each stage of development of opera performance are substantiated.

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## **Additional Professional Education as a Factor in the Development of the Head of an Educational Organization**

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*Key words and phrases:* additional professional education; continuing professional education; managerial culture of the teacher; head of the educational organization.

*Abstract:* The study aims to consider the resource of continuous professional education in the formation of the head of an educational organization. The objectives of the study are analysis of the formation of the managerial culture of a teacher-leader at various levels of continuing education, characterization of the resource for additional professional education. The research hypothesis is as follows: the formation of the management culture of the head of an educational organization is carried out at all stages of continuing education and is provided with resources for pre-professional and professional training of teachers, additional education and participation in socially oriented activities. The research methods are analysis, systematization, and generalization. The results substantiate the potential of additional professional education in the development of the head of an educational organization.

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## **Experience of the Mordovian State Pedagogical University in Creating a Model of Civic-Patriotic Education**

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*Key words and phrases:* pedagogical university; cluster; innovative structure; civic-patriotic education; levels of education.

*Abstract:* The article discusses the main directions of civic-patriotic work within the framework of the cluster of Mordovian State Pedagogical University named after M.E. Evseviev. The close relationship between its various structural elements is revealed; their role in the training teachers who are patriots of their homeland is shown.

The research objectives are as follows: the article aims to analyze the relationship, firstly, between different levels of education operating within the specified university and, secondly, between its structural divisions in the work on civic-patriotic education.

The research hypothesis is based on the assumption that the current state of civic-patriotic work, the involvement of the teaching staff and a significant part of the studying youth within the cluster in it creates conditions for high-quality training at graduation as a teacher, a patriot, a defender of homeland.

The results are as follows: it was revealed that all educational and extracurricular activities at Mordovian State Pedagogical University are permeated with the idea of training teachers who are mentors, citizens and patriots of their homeland and motherland, who are focused on nurturing civic and patriotic values in the sociocultural and age environment of preschoolers, schoolchildren, and students secondary vocational education. This is manifested both vertically, that is, in the activities of interconnected and multi-level segments of general and professional education, and horizontally, that is, in the main areas of activity of the university itself, including educational, scientific and educational.

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## **Information Technologies in the Practice of Teaching Russian as a Foreign Language at the Stage of Pre-Professional Training**

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*Key words and phrases:* Russian as a foreign language; digitalization; information and

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communication technologies; physics; pre-professional training.

*Abstract:* The purpose of this article is to consider strategies for using information technology in the process of teaching Russian as a foreign language. The research objectives are to determine the current state of the problem of using ICT in the process of teaching RFL; to describe the methodological possibilities of using information technologies in teaching RFL. The research hypothesis is based on the assumption that learning the Russian language by foreign students will be more successful if modern multimedia and online resources are integrated into the educational process. The research methods are the analytical-descriptive method, observation, and modeling. In the process of research, we proved that the use of information technology in the educational process activates the work of students and contributes to the development and improvement of their independent work skills.

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### **Russia and Tunisia: Comparative Analysis of the Teacher Education System (Axiological Aspect)**

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*Key words and phrases:* pedagogical values; teacher education; teacher; Russia; Tunisia; education system.

*Abstract:* The article is devoted to the study of value foundations in the teacher education systems of Russia and Tunisia. Its relevance is due to the development and strengthening of international relations between Mordovian State Pedagogical University named after M.E. Evseviev and Tunisian universities that train teachers. The purpose of the article is to study and compare the axiological foundations of Russian and Tunisian teacher education. The objective of the study is to identify the general and special in teacher education systems from the point of view of axiological issues. The hypothesis is as follows: the effective development of teacher education in each country is conditioned by being based on strong spiritual and moral foundations, cultural traditions, and specific national characteristics. The scientific novelty of the article lies in the comparative analysis of the teacher education systems of Russia and Tunisia. The results of the study are as follows: axiological foundations have been identified; important pedagogical values, allowing for a fruitful exchange of experience in the training of qualified teaching staff have been highlighted.

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### **Experimental Study of the Conditions for the Development of Educational Motivation among University Students in Extracurricular Activities**

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*Key words and phrases:* motivation; educational motivation; students; extracurricular activities; experimental research; conditions for the development of motivation; university.

*Abstract:* The purpose and objectives of the article are to analyze how experimental research can help in studying the educational motivation of students to actively participate in extracurricular activities. The hypothesis is that for the effective study of student motivation, the use of experimental psychological research can be of great benefit. The achieved results are that the theoretical and methodological analysis carried out within the framework of the psychology of motivation made it possible to draw conclusions regarding the methodological effectiveness of studying educational motivation among university students in extracurricular activities through experimental psychological methods.

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## **The Role of the Komsomol in the History of the Development of the GTO in the Pre-War Years**

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*Key words and phrases:* Komsomol; training and consultation points; UKP; GTO; standards; physical culture.

*Abstract:* On January 25, 1931, the IX Congress of the All-Union Leninist Communist Youth League (hereinafter referred to as Komsomol) took place, which obliged all Komsomol members and working youth of the Union of Soviet Socialist Republics (USSR) to pass a public military-technical exam in the fall of 1934. One of the main parts of this exam was passing the standards of the All-Union Physical Education Complex "Ready for Labor and Defense" (GTO).

The purpose of the article is to study the activities of the Komsomol in the emergence and development of the GTO complex in the pre-war period in the USSR. The main objective of this work is: to study the role of the Komsomol in the emergence and development of the GTO in our country, to analyze the quality of the standard curriculum and organizational work on the activities of the educational and consulting centers of the GTO for organizations and institutions of the Soviet Union, to pay attention to interesting facts of that time, in the future compare with a modern organization of similar activities. The main research methods are theoretical analysis and synthesis of scientific and methodological literature, research of archival materials. The results of the study, based on the results of the study of archival data, allow us to draw the appropriate conclusions that the role of the Komsomol in organizing the passing of the GTO standards in the pre-war period was key; work at training and consultation points was carried out massively and effectively.

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## **The Role of Reference Literature in Teaching Law**

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*Key words and phrases:* reference literature; legal information; teaching methods; case technology; portfolio method.

*Abstract:* The relevance of the research topic is characterized by the need to develop practical skills in using reference literature on law for students in the educational process. The study aims to address the question of the role of reference literature in teaching law. The purpose of this paper is to study the possibilities of reference legal literature in the educational activities of students. The main research method is system analysis. The authors conclude that modern education poses new challenges for teachers. If earlier they sought to give students a certain amount of knowledge and teach them how to manage it, now the main thing for them is to teach students to obtain knowledge with the help of various reference literature, develop their intelligence, instill general educational skills, i.e. teach to learn. This article is devoted to the study of this issue.

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## **Efficiency of Strength Training of Students Involved in Arm Wrestling**

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*Key words and phrases:* arm wrestling; strength training program; sectional classes; students.

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*Abstract:* Arm wrestling has recently become a widespread sport, popular among many boys and girls. During student years, active strength training contributes not only to improving physique and motor fitness, but also to the formation of a culture of health and physical activity. Despite a sufficient amount of information about strength training for young men, there are very few sectional arm wrestling training programs for students. The purpose of the study is to develop and test a methodology for developing the strength abilities of male students involved in arm wrestling in a sports club. The objectives are to identify the features of the training process in arm wrestling, to develop a methodology for developing the strength abilities of male students involved in arm wrestling as part of sectional classes and to determine the effectiveness of the developed methodology. The article presents the results of the study. The developed methodology for developing the strength abilities of male students involved in arm wrestling can be used in student sports clubs as part of sectional classes, and as part of a full-fledged training process.

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## **History and Development of Piano Education in China**

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*Key words and phrases:* piano performance; music education in China; history of piano art; Soviet piano school; outstanding pianists of China.

*Abstract:* The purpose of this article is to present a historical retrospective of the development of piano pedagogy in China. The research hypothesis is as follows: the article examines the historical stages of the development and formation of China as a state and shows music education through the prism of the state itself and its social, cultural and political changes, however, the development of piano education in China will be more fully presented if it is viewed through a pedagogical piano school and outstanding teachers of China. Methods used in the research on this issue, the results of which are presented in the article: analysis of scientific and scientific-methodological literature, comparison of historical and musical development in China, as well as generalization of the pedagogical experience of outstanding pianists. The study provided a historical overview of music education in China; the stages of development of the piano school in China are considered; the features of teaching in different time periods of the development of piano performance are analyzed; the relationship between the development of music education and the social and political development of the country is revealed; external and internal conditions influencing the development of piano education in China are substantiated.

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## **Comparative Analysis of Physical Fitness Indicators of Petrozavodsk State University Students Mastering the Elective Course “Fitness”**

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*Key words and phrases:* physical culture; standards; fitness; students.

*Abstract:* The article examines the physical preparedness of first-year students of Petrozavodsk State University, mastering the elective course in physical culture “Fitness”. The indicators of standards passed at the beginning of the school year and at the end are compared. To solve the problems posed in the work, research methods were used: theoretical review and synthesis of scientific and methodological literature, comparison.

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## **Using Technology for Visualizing Educational Information in Studying the Creativity of N.S. Gumilyov at Literature Lessons at Secondary School**

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*Key words and phrases:* information visualization technology; stories; eidos-compendium; interactive diagram; mental map.

*Abstract:* The purpose of the article is to justify the feasibility of implementing technology for visualizing educational information when studying the creativity of N.S. Gumilyov in literature lessons in secondary school. The objectives of the research are to reveal the concept of “technology for visualizing educational information” in modern methodological science, to describe its methods (techniques), to justify the methodology for their use in literature lessons at school using the example of studying the ballad “The Serpent” by N.S. Gumilyov in the 6th grade. The hypothesis of the study is to assume the productivity of using techniques for visualizing educational information in literature lessons in middle school. The research methods are theoretical analysis, description, generalization, and systematization. As a conclusion, it should be noted the assertion of the effectiveness and versatility of information visualization technology in the educational process of literature in a modern school environment.

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## **Research Work as a Way to Increase Students' Motivation for Foreign Language Communication**

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*Key words and phrases:* communication; motivation; foreign language; project; report; NIRS; primary and secondary needs.

*Abstract:* The paper aims to develop recommendations for increasing students' motivation for foreign language communication within the framework of research work. The objectives are to justify the need to involve students in research work in a foreign language; propose directions for increasing student motivation through the theory of needs. The hypothesis is as follows: students' motivation for foreign language communication during research work is higher if their needs are realized. The research methods are analysis of the theory and practice of the development of foreign language communication within the framework of research work; synthesis of directions for using research work as a way to increase students' motivation for foreign language communication. The results are as follows: practical recommendations are proposed for the implementation of primary needs (physiological and safety) and secondary needs (involvement, recognition, self-expression) as the basis for motivating students to perform research work and present the results in a foreign language.

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## **Systematic Approach in the Hierarchy of Approaches to the Organization and Analysis of the Educational Process**

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*Key words and phrases:* active learning; hierarchy of approaches; integrated approach; educational system; educational process; systematic approach.

*Abstract:* This topic explores an important aspect of modern education - a systematic approach in the context of the organization and analysis of the educational process. Within the framework of this

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topic, a hierarchy of approaches is considered that makes it possible to create a holistic and effective educational system. The systems approach assumes an integrated view of education, taking into account many factors and the relationships between them. Important aspects are modeling of educational processes, assessment of educational results, as well as the development of innovative teaching methods. The emphasis is on a competency-based approach, which contributes to the formation of not only knowledge, but also skills necessary in the modern world. As a result, this topic helps to understand how a systematic approach affects the quality and efficiency of the educational process, providing preparation for the updated requirements of society and the labor market.

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### **Psychological and Pedagogical Support of a Young Teacher**

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*Key words and phrases:* young teacher; support; pedagogy; psychology.

*Abstract:* This article discusses the issue of psychological and pedagogical support and adaptation of a young teacher. The author analyzed the problem of support, gave the basic concepts of the term "support", found solutions and made recommendations. The purpose of the study is to develop a program-recommendation for the prevention of emotional burnout of teachers at school. Based on the purpose of the study, the following tasks were set: to conduct an analysis of the theoretical and methodological aspect of the problem of emotional burnout; to investigate the features of emotional burnout of teachers at school; to identify and isolate subjective and objective factors of emotional burnout; to give recommendations for preventing emotional burnout of teachers at school. The hypothesis of the study is based on the assumption that teachers of secondary schools who are susceptible to emotional burnout may have an increased level of anxiety and a low level of stress resistance. The research methods include analysis, observation, collection of statistical data, and generalization. The results of the study will be an assessment of the psychological and physical state of the teacher, as well as an increase in his professional qualities.

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### **The Relationship between Accentuated Character Traits and the Type of Hemodynamics**

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*Key words and phrases:* character accentuation; type of hemodynamics.

*Abstract:* The main cause of mortality is currently cardiovascular diseases (CVD), and increasingly the presence of CVD is associated with characteristics in the psycho-emotional sphere. Increasingly, the presence of CVD is associated with characteristics in the psycho-emotional sphere. Due to an imbalance in the psycho-emotional state, reactions occur from the life support systems: increased blood pressure, increased heart rate and respiration, vegetative shifts, which in turn changes hemodynamic characteristics and, as a consequence, the type of hemodynamics. The purpose of the study is to consider the features of hemodynamics depending on individual accentuation character traits. Materials and methods. The study involved 189 medical university students, the average age was  $19.68 \pm 0.1$  years, 163 girls and 26 boys. A division was made into subgroups based on character accentuations and types of hemodynamics. To determine the type of character accentuation, the Leonhard- Shmishek test was used. Hemodynamic types were identified according to the following indicators: heart rate, DBP, IOC, OPSS. Results: most students have traits of hyperthymic and emotive types of character accentuation. Girls more often showed traits of the emotive type with eukinetic type of hemodynamics. Young men more often showed hyperactive characteristics with a hypokinetic type of hemodynamics.

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## On the Issue of Professional Education of Teachers for Inclusive Interaction

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*Key words and phrases:* teacher; professional education; inclusive interaction; children with disabilities.

*Abstract:* The purpose of the article is to reveal the importance of additional professional education for inclusive interaction. The objectives are to substantiate the relevance of the problem under study, to argue for the correlation of successful interaction between teachers in the field of inclusion and professionalism. The research hypothesis is based on the assumption that the success of inclusive interaction between teachers and children with disabilities will be most successful under the following conditions: if the teacher has professional competencies in the field of inclusive education; if the teacher takes into account the physiological and individual characteristics of children with disabilities; if the interaction between the teacher and children with disabilities takes place in the subject-subject paradigm. The research methods are analysis, synthesis, generalization, comparison, observation, conversation, and survey. The results are as follows: in the course of improving the professionalism of additional vocational education teachers, their inclusive interaction became more successful.

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## Diagnosis of Teacher Professional Deformation

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*Key words and phrases:* diagnostics; professional activity of a teacher; professional deformation of a teacher; assessment of the level of professional deformation

*Abstract:* The study aims to identify and justify the psychological and pedagogical conditions for the correction of professional deformation. The objectives are to provide a theoretical analysis of professional deformation. The hypothesis is as follows: under what psychological and pedagogical conditions is it possible to prevent professional deformation. As a result of the study, the following psychological and pedagogical conditions for the correction of professional personality deformation were identified and justified: the creation of a favorable working environment, the development of emotional competence skills, the use of psychological methods of self-regulation and the development of individual self-development plans.

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## Museum Network Challenge "Siberian Teacher"

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*Key words and phrases:* museum of educational organization; Year of the teacher and mentor; networking; challenge.

*Abstract:* The relevance of the article is determined by the interest in organizing network interaction between pedagogical communities of the region using innovative forms of activity. The purpose of the article is to present the experience of a network challenge organized in pedagogical universities of the Krasnoyarsk Territory. When working on the article, the authors used methods of analysis and synthesis, studying the products of the activities of educational organizations. The results of the article may be of interest to practicing teachers when organizing not only network cooperation, but also exploratory museum work with students.

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## Heuristic Conversation in Teaching Linguistic Disciplines

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*Key words and phrases:* competence-based approach; logical thinking; fundamentals of linguistics; problematic issue; partial search method; heuristic conversation.

*Abstract:* The relevance of the article is due to the need for practical study of the application of the heuristic conversation method in the teaching of linguistic disciplines. The purpose of the article is to analyze and identify the main features of a heuristic conversation conducted with bachelor students of language majors. The following methods were used in the work: analysis of scientific literature, synthesis and generalization of experience. The result is the implementation of the identified forms of work and the development of guidelines for the discipline "Fundamentals of Linguistics".

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## The Role of Philosophy in Higher Education: From Antiquity to Modern Times

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*Key words and phrases:* education; worldview; philosophical education; humanism; higher education; teaching.

*Abstract:* The objectives of the paper are to describe the history of teaching philosophy in different eras, argue for the importance of philosophy as a discipline. The hypothesis is based on the assumption that philosophical education in modern higher education occupies an unstable position. The methods include description, comparative analysis, and systematization. The results are as follows: the urgent need to strengthen the status of philosophy in a university for the formation of social and personal qualities, as well as general cultural competencies, is substantiated.

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## Assessing the Need For Systematic Implementation of Health-Saving Technologies in the Higher Education System

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*Key words and phrases:* health-saving technologies; higher education; physical activity; healthy lifestyle.

*Abstract:* The article is devoted to the study of the relevance of using health-saving technologies in the higher education system. The purpose of the study was to assess the need for the systematic introduction of health-saving technologies into the educational process in universities and the emphasis on the formation of a health-saving type of thinking among students. The research materials included the results of a medical examination of first-year students, the results of a sociological study (questionnaire) on the formation of healthy lifestyle skills, the results of a questionnaire to assess physical activity (O. Korznikova's method) and determine the level of anxiety (Spielberger questionnaire). The total number of respondents in each study is 145. In the paper, the authors analyzed the curricula according

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to which students of a pedagogical university are trained, the place and content of disciplines aimed at developing health-saving thinking, and assessed the physical activity of students, the state of anxiety, and the ratio of students by health groups. The results allow us to conclude that it is necessary to systematically introduce health-saving technologies into the higher education system.

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### **Psychological Difficulties of Communication among Law Enforcement Officers Undergoing Professional Training**

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*Key words and phrases:* communication; law enforcement officers.

*Abstract:* Based on the conducted research, the article presents data on the psychological difficulties of communication faced by law enforcement officers undergoing professional training. The purpose of the study is to identify psychological difficulties in communication among employees undergoing professional training. The objectives are to identify psychological difficulties in communication among employees undergoing professional training; develop recommendations for overcoming psychological difficulties of communication by employees undergoing professional training. The research hypothesis is the assumption that employees undergoing professional training, due to their lack of experience in professional work, experience a number of psychological difficulties, in overcoming which they need help.

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### **Model of Professional Education for Oil and Gas Industry Specialists**

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*Key words and phrases:* model; professional education; oil and gas industry specialists; industrial partners.

*Abstract:* The problem of creating an innovative model of a vocational education system for specialists in the oil and gas industry, which shapes the content and management of education processes, is very relevant. The purpose of the study is to create an innovative model of professional education for oil and gas industry specialists. The authors hypothesize that for successful training of engineers it is necessary to create pedagogical conditions for self-development and self-determination of the individual, to form professional and transprofessional competencies, and to conduct training along individual educational trajectories. The research methods were the study of scientific literature and scientific research in the field of vocational education, testing, and interviewing students at the university. Based on the results of a pedagogical experiment, it was proven that the use of an innovative model of professional training for oil and gas industry specialists has a positive effect on the formation of professional and supra-professional competencies, self-determination and self-development of a future specialist in the oil and gas industry.

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### **Professional Subjectivity of the Future Teacher as a Goal and Means of Higher Pedagogical Education**

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*Key words and phrases:* subject of activity; subjectivity; professional subjectivity of a teacher; final

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qualifying work.

*Abstract:* The goal is a theoretical analysis of the phenomenon of professional subjectivity as the goal and means of professional pedagogical education and a description of work experience in this direction at the stage of preparing the final qualifying work. The hypothesis is based on the assumption that: the formation of the professional subjectivity of the future teacher can and should become the goal and means of pedagogical education, subject to certain conditions. The research methods are analysis of the works of scientists on the research problem, experimental search work, formative experiment, observation, and conversation. The results of the study are as follows: conditions were identified under which the formation of the professional subjectivity of the future teacher when working on his final qualifying work will be effective.

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### **Theoretical and Applied Foundations of Developing the Readiness of a Future Teacher to Work with a Disharmonious Family**

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*Key words and phrases:* future teacher; readiness to work; university; vocational training; family; disharmonious family; case technology.

*Abstract:* The author addresses the pressing problem of modern educational practice – the preparation of future teachers who are ready for productive interaction with a disharmonious family. Due to the increase in the total number of disharmonious families, the solution to this problem determines state security and the well-being of the entire society. The article gives a definition of a disharmonious family, identifies three characteristic criteria, and also lists its main features, to which a specialist should pay special attention. The purpose of the study is to present the key areas of activity of a specialist with a disharmonious family. The author names and explains traditional and innovative methods and technologies of education used in higher education to form the theoretical and practical foundations of a future teacher's readiness to work with a disharmonious family. Case technology is considered as the most productive technology that allows you to test an independently found algorithm for working with a disharmonious family.

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### **Professional Self-Identity as a Psychological and Pedagogical Phenomenon**

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*Key words and phrases:* identity; identification; professional identity; self-identification; model of the ideal professional; professional competence; professional self-identification.

*Abstract:* The purpose of the article is to consider professional self-identity and its impact on the professional development of the individual. The authors turn to the history of the term "identity" and its introduction into the scientific dictionary by E. Erikson. Identity is seen as a complex phenomenon associated with awareness of personal identity and solidarity with ideals and group identity. The objectives are to consider the main aspects of professional identity, including the knowledge, skills and abilities necessary to work in a particular field; to analyze the influence of education and individual expectations on professional identity; to identify the importance of professional self-awareness, which includes comparing the idea of the profession with ideas about oneself, and is associated with a person's social motives. The hypothesis is based on the assumption that professional self-identity has a significant impact on the professional development of an individual, including knowledge, skills, education and expectations, as well as professional self-awareness. The research methods include analysis, systematization, deduction, classification, and comparison. The article is of interest to psychologists and teachers working with professional formation and personal development.

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**Pedagogical Potential of Cross-Training Methods in the Formation  
of Professional Competencies among Students of a Pedagogical University**

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*Key words and phrases:* formal teaching methods; informal teaching methods; cross-training methods; pedagogical process; therapeutic physical education; massage.

*Abstract:* The purpose of the study is to develop a system of cross-sectional methods for studying the discipline “physical therapy and massage” by students of non-medical educational organizations and experimentally prove its effectiveness. The research hypothesis is that the formation of professional competencies in the field of health conservation (GPC-8) will be successful if cross-cutting methods are integrated into training. The research methods are analysis of scientific literature on the research problem, observation, conversation, testing, method of expert assessments, and mathematical processing of the data obtained. The results are as follows: the analysis of the data obtained during the experimental work allows us to draw a conclusion about the effectiveness of the implementation of cross-sectional methods in the formation of professional competencies of future teachers within the framework of studying the discipline “physical therapy and massage”.